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THE HARMONY OF INTERESTS: AGRICULTURAL, MANUFACTURING, AND COMMERCIAL. BY H. C. CAREY.

WHAT! more of the political economy of the Plough? Yes, reader, more; for the subject is a grave and comprehensive one, not to be despatched by that sort of legerdemain which we see practised with the high-sounding "Resolutions" taken ready cut and dried in his pocket, by the party bell-wether to the political caucus, to be presently reproduced and proclaimed as the quintessence of patriotic deliberation! No! the topics here discussed involve the very foundations of agricultural and other industrial pursuits—topics in reference to which the wisest men have been divided into schools, each advocating systems diametrically opposed, and under which, as the one or the other prevails, the very business of your life must flourish or decline.

Believing sincerely that it would not be possible to overrate the importance of the facts arrayed in these essays, and the arguments based upon them, kindly and gratuitously prepared for this journal at the cost of much labour, how could we suppress the desire that you, too, should enjoy and walk in the light that has revealed and is revealing to us the state of the whole question; showing incontestably how all the great branches of American industry are dovetailed into each other, to be advanced or retarded together?

What would justly be said of the farmer, who, having discovered an infallible preventive of the turnip-fly or the potato-rot, should withhold it from the knowledge of his neighbours, under the pretext that they would be unwilling or too indolent to understand or to practise it? Just so might it be said of us, were we not, with such means as are here placed within our reach, to persevere in laying down, for readers who have the ambition to inquire and to think for themselves, those doctrines in the political economy of agriculture, which in our heart we believe to be much more indispensable to its general melioration than would be the knowledge merely of a remedy against any casual evil or incidental calamity. Even societies, and cattle-shows, and premiums are to be looked upon merely as powerful accessories, not as principals in well-founded plans for the improvement of a great branch of national industry. As for any arbitrary imputation of party motives or objects, we equally repudiate the suggestion and the thought of it. Enough to repeat, that not in this journal, if anywhere, do we belong to any party. Yes, there is a party to which we confess to owe fealty—the party in favour of the diversification and prosperity of *American labour*—in favour of seeing the loom and the anvil thriving in the midst of *our own* ploughs and harrows. Thus much has it been deemed proper to say here, introductory to a continuation of these essays, promising that, as they will run yet through several numbers, the residue of each, (sometimes adding a number of pages, as in the last and present numbers,) shall be appropriated to practical matter—*practical* forsooth! To whom is it of more practical consequence than to the cultivator of the soil to understand thoroughly what has been and will be laid down in these dissertations? We are told, for example, by the advocates of the "free-trade" system, with a pertinacity that has invested it with all the force of some other dogmas equally unfounded, that *protection is blasting to commerce!* Here, then, in the very next chapter, the plainest farmer or planter, however unaccustomed to questions of political economy, can easily understand, *for himself*, how protection does "affect commerce," and so afterwards and in due time will be taught how it affects the *cotton*, the *tobacco*, and the *rice* and the *sugar* planter—the landholder and the manufacturer.

Is it not, we repeat, of practical concern to the followers of all these pursuits—nay, does it not highly interest every intelligent reader—to have clearly explained, in all these lights, questions hitherto deemed too intricate and obscure to fall within the comprehension of any but *professed* political economists, and trading politicians? We feel that the very proposal of the question may almost be considered an insult to the understanding, of patrons such as ours.—Ed. P. L. & A.

CHAPTER SIXTH.

HOW PROTECTION AFFECTS COMMERCE.

COMMERCE is an exchange of equivalents. The greater the number of commodities produced, the greater, other things being equal, will be the number of exchanges. Commerce tends, therefore, to grow with the increase of production.

The machine of production is the earth. The instrument by aid of which it is made to produce is man. To induce man to labour, he must feel confident of obtaining an equivalent; and the larger that equivalent, the stronger will be the inducement to exertion. The more advantageously his powers are applied, the larger will be the production, and the larger the equivalent of a given quantity of labour.

One man raises grain and another sugar. Each desires to exchange with the other, giving labour for labour.

The quantity of grain that must be given for sugar is dependent upon the quantity of both produced. If the season be favourable for the first, the crop will be large. If unfavourable for the second, the crop will be small. Much grain will then be given for little sugar, and *vice versa*, if the season be favourable for sugar and unfavourable for grain, much sugar will be given for little grain. In either case both parties suffer, and commerce is diminished. Each is therefore directly interested in doing whatever may be in his power to increase the returns to the labour of his neighbour, and thus increase the extent of commerce.

To increase production is, then, to increase commerce. By ascertaining the circumstances which tend to limit the one, we shall ascertain those which tend to limit the other. To do so, it is needed only to call to our aid a few simple laws that may be found in any treatise of natural philosophy. They are these:—

First. The greater the power, other circumstances being equal, the greater will be the effect.

The producer of food labours every day and all day. The producer of sugar labours but three days in the week. The quantity of food produced is large and that of sugar small. The food-producer gives much food for little sugar—much labour for little labour.

What is true of individuals is equally true of communities. If the community of food-producers work every day, and that of sugar-producers but three days in the week, the whole of the first will be taxed because of the indolence of the last, and commerce will be diminished. If the whole community of food-producers work every day, and one half of that of iron-producers do not work—or if they apply their labour to other works than those of production—the quantity of iron produced will be small, and much food will be given for little iron. If the food-producing community could induce the workers in iron to labour every day and all day, there would be more iron to be given for food, commerce would be increased, and all would profit thereby. By what means could this be accomplished? To ascertain this, we must inquire the causes of their working so little. Doing so, we might find that among them there was a large proportion perfectly able to labour productively, but unwilling so to do; that some of them employed themselves in carrying muskets, casting cannon, building forts and palaces, constructing ships of war and sailing in them; and that others did nothing except so far as they were employed in devising modes of enabling them, out of the labour of others, to support themselves and those employed in the various operations to which I have referred; and that hosts of others were employed in carrying back and forth the products of the lands of others, and keeping accounts of what they did, and that thus one half of the community produced nothing, while consuming much. The other half we might find to consist of men who were sometimes willing to work but not able, having no work to do, and at others able but not willing, because of the small equivalent obtained, by reason of the necessity for contributing so large a portion of their earnings to the support of those who carried the muskets, built the ships and kept the accounts; and the result might be, that we should find that, although the food-producers gave much, the iron-producers received little, the principal part being swallowed up by the intermediate men, who consumed much while producing nothing. It is obvious that if all worked, there would be three times as much iron produced, that commerce would be increased, and that the producer of food would obtain far more iron as the equivalent of far less food. The food-producing community is therefore contributing largely towards the support of those of the iron-producing one who are able to work and not willing to do so; and their condition will be improved if they can induce those who are able

and willing to work to come forth from among those who are neither able nor willing, leaving the latter class to produce food and iron for themselves. The amount of power to be applied will be increased, and the product will be greater, while there will be fewer among whom to divide it. The return to labour will be larger, and the power of accumulation will be increased.

Second. The more directly power is applied, the greater is its effect.

The producers of food and iron are distant from each other, and the labour required for effecting their exchanges is great. The one obtains his iron by the indirect process of raising food for distant men. The other obtains his food by that of making iron for distant men, and many horses and wagons, ships and men, stand between them. The friction is great and production is small. The equivalents to be exchanged are few in number, and commerce is limited. The equivalent of a day's labour in either food or iron is small. If the producer of iron could draw near to the producer of food, the number of horses and wagons, ships and men, standing between them, would be diminished, and the number of producers would be increased. The equivalents to be exchanged would increase in number, commerce would grow, and the equivalent of a day's labour would be greater.

Third. The more steadily power is applied, the greater is its effect. At one moment the wind blows a gale, while at another there is a calm. The steam-engine works every day and all day, and although the amount of power applied is less, the voyage is made in shorter time. To secure the steady application of power, the air-chamber is provided, and the force produced by the action of the piston-rod is by its aid distributed over the whole period intervening between the strokes.

The producer of food is often idle. At other times he is moderately employed. In harvest times he is hurried, and he loses part of his crop for want of aid. If he could have an air-chamber, by aid of which his efforts could be divided over the year, the equivalent obtained for his labours would be largely increased.

The producer of iron may labour at all seasons, but a large portion of his work—the mining of coal and ore—may be done in advance, and when he has a stock on hand he can suspend his operations for a season. If the producer of food could induce him to come and labour in his vicinity, he could at one period of the year help him to mine or transport ore and fuel, and the other could, at another period, aid him in gathering his crop. The first could then cultivate more land, and the equivalent of labour, in both food and iron, would be increased, and commerce would grow in extent with the increase of equivalents to be exchanged.

Fourth. The more perfect the machinery the smaller will be the quantity required, the less will be the friction, and the greater will be the effect. The iron wheels of the engine encounter little friction in passing on the iron rail, and the force of a man's hand moves tons, where, if applied to a cart-wheel, it could not move a hundred.

The producer of food obtains from the distant iron man small supplies of iron as the equivalent of large quantities of food. He is therefore obliged to use wood where he would desire to use iron. The friction is great, and labour is unproductive. The equivalent of a day's labour is small. If he could induce the iron man to come near him, the equivalent of labour would be largely increased, and he could use iron in place of wood.

Fifth. The more enduring the machinery, the smaller will be the quantity of labour required for its reproduction, and the greater will be the quantity that may be given to the production of further machinery. The wooden post rots, and must be replaced. The iron one endures almost for ever.

The producer of food, distant from the producer of iron, builds ships, and

fences his land with wooden posts. Much of his time is occupied in repairing and renewing them. If he could induce the producer of iron to live near him, he would assist in building furnaces, and might then use iron posts; and then labour that would otherwise be employed in renewing old, might be given to creating new machinery of other kinds, to aid in the work of production, and the equivalent of a day's labour would be increased.

We see, thus, that the larger the quantity of labour, and the more directly and steadily it is applied, and the more perfect and enduring the machinery by which it is aided, the larger is the return to labour, and the greater the number of equivalents to be exchanged.

Let us now suppose, first, that one community has it in its power to monopolize the production of iron, and that of its members many spend all their time in idleness, while others are but occasionally employed—that many spend their time in carrying muskets on their shoulders, while very many are dissolute and drunken—and that the result is, that the quantity of iron produced is but one half or one-third of what it would otherwise be. Commerce is but an exchange of equivalents, and the quantity of food that must be given for a ton of iron is double what it would otherwise be. It is obvious that the food-producing community is taxed for the support of the idle and worthless members of the iron-producing community.

Second. That, in addition to all this, the iron-producing community is thus enabled to compel the food-producing community to be idle, when their labours are not needed on the farm, and to lose their crops for want of aid in harvest. It is obvious that here is a second tax imposed for the support of the non-workers among the producers of iron.

Third. That the scarcity of iron compels the food-producing community to use wagons and common roads when they might have railroads, and to give to the work of transportation ten days' labour instead of one. Here, again, we have a tax imposed for the support of the non-workers among the producers of iron. The food-producers are compelled to transport their products to a distance, and deprived of the power to make roads by which to do it.

Fourth. That the producers of food are compelled to employ more labour in building ships and wagons, and other perishable machinery, than would have been sufficient to build the furnaces and rolling mills, enduring machinery, required to give them all the iron they consumed. Here we have a fourth tax imposed for the support of the non-workers among the producers of iron.

Each one of these operations tends to diminish the number of equivalents that may be exchanged, the number of exchanges made, and the equivalent of a day's labour, in food, iron, or other of the comforts or conveniences of life, and the result is, that the product of labour is scarcely one-fifth of what it would be, were all productively employed.

These things premised, we may now examine the working of the colonial system.

Colonists are men who work. Of those who remain behind, a large portion do not work. Some live in poor-houses, and others in palaces. Some dance and sing, and others carry muskets. Some build ships of war, and others sail in them. The producers are few. The non-producers are many; yet they must eat, drink, wear clothing, and have houses, and these things must be provided for them by those who work. If all worked, the quantity of iron produced would be large, and those who produced food would get much iron in exchange. As few desire to work, and all must eat, the colonial system was invented for the purpose of compelling colonists to give much food and wool for little iron. The consequence has been everywhere the same.

While thus taxed for the maintenance of the money-spending classes, the colonists everywhere have been compelled to waste much labour, to work with poor machinery, and to give more of the products of labour for the use of that which is perishable than would have produced that which would endure almost for ever. Production is small. The equivalents to be exchanged are diminishing in number. Commerce is perishing.

The Irishman is compelled to waste much labour.* He works with poor machinery. He gives half the product of his labour for the use of wagons and ships. He eats his crop of potatoes, and goes in rags. He has nothing to exchange.† He flies to America, and the number of exchanges to be made in Ireland, and from Ireland, is thus diminished.

The Hindoo flies from the valleys and plains to the hills, that he may escape from the system. Arrived at the hills, he finds no demand for his labour but in the cultivation of his little piece of land. He works with poor machinery, and his miserable product of fifty pounds of cotton to the acre is transported to Manchester, thence to be returned to him in the form of cloth, getting one pound for ten; and thus giving nine-tenths of his labour for the use of ships and wagons, perishable machinery, when one-fifth would have done the work at home, could he have had permanent machinery. He flies again, or he dies of famine and pestilence, or he sells himself as a slave, to go to Demerara; and thus is the number of the exchanges of India, and from India, diminished.

Men are everywhere flying from British commerce, which everywhere pursues them. Having exhausted the people of the lower lands of India, it follows them as they retreat towards the fastnesses of the Himalaya. Afghanistan is attempted, while Scinde and the Punjaub are subjugated. Siamese provinces are added to the empire of free trade, and war and desolation are carried into China, in order that the Chinese may be compelled to pay for the use of ships, instead of making looms. The Irishman flies to Canada; but there the system follows him, and he feels himself insecure until within this Union. The Englishman and the Scotchman try Southern Africa, and thence they fly to the more distant New Holland, Van Diemen's Land, or New Zealand. The farther they fly, the more they must use ships and other perishable machinery, the less steadily can their efforts be applied, the less must be the power of production, and the fewer must be the equivalents to be exchanged, and yet in the growth of ships, caused by such circumstances, we are told to look for evidence of prosperous commerce!

The British system is built upon cheap labour, by which is meant low

* In 1842, three years before the potato rot, Ireland was thus described by an English traveller: "Throughout the south and west of Ireland, the traveller is haunted by the face of the *popular starvation*. It is not the exception—it is the *condition* of the people. In this fairest and richest of countries, men are suffering and *starving by millions*. There are thousands of them, at this minute, stretched in the sunshine at their cabin doors with *no work*, scarcely any food, no hope seemingly. Strong countrymen are lying in bed, '*for the hunger*'—because a man lying on his back does not need so much food as a person a-foot. Many of them have torn up the unripe potatoes from their little gardens, and to exist now must look to winter, when they shall have to suffer starvation and cold too."—*Thackeray. Irish Sketch Book*.

† People with whom starvation is "the condition" of life, consume little of that clothing which England furnishes in exchange for so much labour.

"Everywhere, throughout all parts, even in the best towns, and in Dublin itself, you will meet men and boys—not dressed, not covered—but hung round with a collection of rags of unrivalled variety, squalidity, and filth—walking dunghills. * * * No one ever saw an English scarecrow with such rags."—*Quarterly Review*.

Transferred to this country, every one of these men would become a large consumer of food and cotton, and thus commerce would be increased.

priced and worthless labour.* Its effect is to cause it to become from day to day more low priced and worthless, and thus to destroy production upon which commerce must be based. The object of protection is to produce dear labour, that is, high-priced and valuable labour, and its effect is to cause it to increase in value from day to day, and to increase the equivalents to be exchanged, to the great increase of commerce.

The object of what is now called free-trade is that of securing to the people of England the further existence of *the monopoly* of machinery, by aid of which Ireland and India have been ruined, and commerce prostrated. Protection seeks to *break down this monopoly*, and to cause the loom and the anvil to take their natural places by the side of the food and the cotton, that production may be increased, and that commerce may revive. How far it has tended here to produce that effect we may now examine.

Prior to the passage of the tariff of 1828, our exchanges of iron amounted to only 25 pounds per head. By 1832 they had increased to 46 pounds per head. Commerce thus had grown. From 1834 to 1841, they averaged 45 pounds per head. Commerce was stationary. In 1841 and '42, it fell to 38 pounds. Commerce had fallen with what was called free-trade. From 1844 to 1847, the equivalents of iron to be exchanged had increased to 97 pounds per head. Commerce had grown with protection. They are now 73 pounds per head. Commerce has fallen with the diminution of protection. If we turn now to coal, cotton, woollens, ships, or railroads, similar facts meet us everywhere. The number of exchanges grows with the system that looks to the elevation of the labourer. It diminishes with that which looks for its growth to the depression of the labourer. The interests of commerce are therefore in perfect harmony with those of manufactures and agriculture.

The one system repels population. The other attracts it, and hence it

* The poor silk weaver described in the following paragraph, which I take from the *London Spectator*, is the type of the system. He works so 'cheap' that he starves the poor Hindoo, and then starves himself. "His case *would not* be cured by protection." What he needs is the transfer of his labour from what is here called "production," but what is really only the conversion of the products of others, to that only thing which can be called production, and which consists in an increase of the *quantity* of commodities to be consumed. He merely changes their form from silk to silken cloth. Were his labours employed on any of the many millions of rich yet waste land within the kingdom, he would obtain more and better food, at less cost of labour. He could then feed better, and have more to offer in exchange. Commerce would then grow.

"Nearer to us, in the outlying parts of the metropolis, the traveller of 'The Morning Chronicle' describes regions where the people are hopelessly contending with a system of industry that is fostered by commerce, because it yields 'profit,' and is peopled, because it sometimes yields subsistence—the means of keeping body and soul together, though not always that. We know that the describer does not exaggerate. Many and many a man toils, with others of his family, from dark before the dawn until far into the next night, as long as human endurance will last, and *then* the produce of their industry falls short of subsistence. You say, 'it is a decaying trade.' It is not a decaying trade: read 'The Morning Chronicle,' and see how the workman makes silk which, in spite of free trade, not only beats the Frenchman out of the market, it is so good and so 'cheap,' but is further cheapened to bribe customers with reductions of prices filched from the wages of the miserable workman. Protection would not cure that man's case. Go round the district, stranger to you than Brussels, Lyons, or Genoa, and survey the dull, level aspect of poverty over all—poor workpeople, poor small tradesmen—a town of back streets. See the number of shops dealing in articles at second hand—not merely pawn-shops, but small clothes-dealers, traders in shop-marked stationery, dealers in apples that have seen better years in happier regions; the very grocery looks window-stained. Production, production, in a ceaseless round, but not enough subsistence for that sad nation; many things made and sold, and resold, but too few of them things to eat."

is that we see the whole people of Europe anxious to reach our shores. Abolish protection and immigration will cease, and commerce will diminish, for there will be less cloth and iron to be exchanged against labour. Make protection perfect and permanent, and immigration will increase rapidly, for there will be more cloth and iron to be exchanged against labour.

Were Ireland this day free, she would establish protection and thus arrest emigration. Food, and cloth, and iron, would become more abundant, and commerce would grow. Were Canada independent, she would establish protection, and then she would retain the immigrant coming from Ireland or England. Were India independent, she too would establish protection, and then the culture of cotton would be resumed on the rich lands of Bengal. In all these cases production would be increased, and the power to maintain commerce would grow. The people of the United States are the best customers to the people of England, because they are in some degree protected against the exhaustion consequent upon the existence of their system. Ireland cannot buy, and she is reduced to beg. Were she independent she would make iron, and then she could buy fine cloths, silks, books and pictures. The well-understood interests of all nations are in perfect harmony with each other.

The object of free trade is proclaimed to be the increase of commerce, but commerce withers under it. Ireland now consumes a pound of cotton per head. Transfer an Irishman here, and he will consume a dozen pounds, and 700,000 of her people would make more trade between the producers and consumers of cotton than is now maintained with the whole eight millions of Ireland. Were she free, she would adopt protection, and trade would grow, for she would then need six pounds per head. The commerce of the *Zollverein* has grown with protection. The people of Germany now consume two pounds of cotton where before they consumed but one. The commerce of India diminishes with every approach to what is called free trade. The producers of cotton on the lower lands of Bengal could have, as the equivalent of a day's labour, quadruple the iron that can be obtained now that the cultivator of that commodity has been driven to seek the high and poor lands.

The free trader, so called, says to the farmer, "You can have English iron in New York for thirty bushels of wheat, but you must hand over to the Treasury ten bushels for permission to make the exchange. If you take a ton of American iron, you must give to the producer of it forty bushels, and thus are you taxed ten bushels for the support of the iron man." Abolish protection and we shall have more food to sell abroad and more iron to buy abroad, and will need more wagons and ships, and it will then take sixty bushels of wheat—perhaps even one hundred—to pay for a ton of iron. The quantity to be exchanged will then fall to 20 pounds per head, and commerce will be diminished.

The farmer has his choice between giving *thirty* bushels for the support of the people who dance and sing and live in palaces, and that of those who carry muskets, or *ten* for the maintenance of the government under which he lives. The more he gives to the first, the more and the longer he must continue to give, the poorer he must grow, and the less will be the power to maintain commerce. That such is the case will be obvious from an examination of facts given in the last chapter. In the years from 1827 to 1834, 275,000,000 pounds of cotton would have purchased 1,250,000 tons of iron. In 1845-6, 600,000,000 were required to pay for 1,200,000 tons. What became of the difference? Were the English miners better clothed? On the contrary, it was but little before that time that it

was made known to the world that males and females worked together in the mines, absolutely naked. Was the condition of the people better? On the contrary, Ireland was fast becoming a great poor-house, and the poor-rates of England were fast advancing to the point they have now attained, that of £8,000,000 per annum. What then went with the difference? The question may be answered by pointing to the vast increase of public expenditure in the last fifteen years, during which the number of men who carry muskets and build ships of war has been so largely increased; to the innumerable and expensive commissions for ascertaining the causes of distress and pauperism; to the great fortunes of bankers and successful speculators; to men like Hudson, the rail-road king; to the large number who have in the late railroad speculation realized immense fortunes, as engineers, solicitors, counsellors and parliamentary agents, and to the host of others who fatten on the people. The productive power is diminishing, and the few become greater as the many become less. With every step in the progress of the latter, the power to maintain commerce diminishes, for the people become poorer, and the power to produce commodities to be given in exchange becomes more and more limited.

Whatever the occurrence that tends to diminish production, whether wars or revolutions, the increase of armies and fleets without the actual occurrence of war, or the increase of inequality, the few becoming richer and the many poorer, the effect is to impose a tax upon the consumers of the commodity the production of which is thus restrained. Under a system of real freedom of trade the chief portion of this tax would be paid by the actors themselves, for the immediate effect of such occurrences would be that of stimulating other nations to increased exertions to fill the vacuum that had been created. Under the system which gives to one nation a monopoly of the machinery for converting the products of other nations, a large portion of the tax may be, and is thrown upon them, and thus are they made to contribute largely towards the maintenance of all that class, poor and rich, who prefer to live by the labour of others.

We have seen that the quantity of cotton consumed in 1845 and '46 averaged 596,000,000 pounds, that the price of gray cloth was 6s. 7d., and that 34,700,000 pieces delivered in Liverpool would have been required to pay for the cotton also delivered in Liverpool—all freights, charges, &c., being thus left for the planter to pay.

The average work of operatives in this country would be the conversion of 4000 pounds of cotton into cloth of this description. In England, we may set it down at 3000, and this would require 200,000 to convert the whole quantity. Allowing them to average even £30 each,* the wages would amount to £6,000,000, and the product would be 92,000,000 of pieces, 35,000,000 of which would pay for the cotton, leaving 57,000,000

Worth	£19,000,000
From which deduct the labour performed, say,	6,000,000†

And there remain for interest, profits, &c.,	£13,000,000
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In order that large profits be realized, it is necessary that the price of the raw material be kept low; a state of things which results necessarily from the quantity requiring to be converted bearing a large proportion to the machinery prepared for its conversion. The mode of accomplishing this is simple. The first indication of a tendency to rise in the price is met by

* The result of careful inquiry, in 1833, gave 10s. 5d. as the average of operatives, male and female, mechanics, engineers, &c. This would be £27, 1s. 8d. for the year.

† This is 2½d. per pound, which is much more than the truth.

working short hours, the effect of which is to diminish the wages of labour to a point so near the cost of food and rent, and taxes on both, that the power of purchasing clothing is almost destroyed; and therefore it is that we see such prodigious changes in home consumption whenever a small rise of prices takes place. The stock begins to accumulate, and with its accumulation the price falls. Mills again run full time, and so they continue until another rise takes place, when the same operation is performed, as is at this moment being the case.

The exchanger, owner of machinery, thus stands between the labourer who produces, and the labourer who consumes the cotton, fixing the price for both, and taking for himself the largest share; and thus it is that men accumulate colossal fortunes, while surrounded by men, women, and children living in poverty and clothed in rags.* Of the burden thus thrown upon

* Rothschild may be taken as the type of the whole system, and the following notice of him and of his modes of taxing those by whom he was surrounded, furnishes a picture of the speculators of every kind, in England, who live at the cost of the labourers of the world:—

“The name of Nathan Meyer Rothschild was in the mouths of all city men as a prodigy of success. Cautiously, however, did the capitalist proceed, until he had made a fortune as great as his future reputation. *He revived all the arts of an older period.* He employed brokers to depress or raise the market for his benefit, and is said in one day to have purchased to the extent of four millions. The name of Rothschild as contractor for an English loan made its first public appearance in 1819. But the twelve millions for which he then became responsible went to a discount. It was said, however, that Mr. Rothschild had relieved himself from all liability before the calamity could reach him. From this year his transactions pervaded the entire globe. The Old and the New World alike bore witness to his skill; and with the profits of a single loan he purchased an estate which cost £150,000. Minor capitalists, like parasitical plants, clung to him, and were always ready to advance their money in speculations at his bidding. Nothing seemed too gigantic for his grasp; nothing too minute for his notice. His mind was as capable of calculating a loan for millions as of *calculating the lowest possible amount on which a clerk could exist.* Like too many great merchants, whose profits were counted by thousands, *he paid his assistants the smallest amount for which he could procure them.* He became the high-priest of the temple of Janus, and the coupons raised by the capitalist for a despotic state were more than a match for the cannon of the revolutionist.

“From most of the speculations of 1824 and 1825, Mr. Rothschild kept wisely aloof. The Alliance Life and Fire Assurance Company, which owes its origin to this period, was, however, produced under his auspices, and its great success is a proof of his forethought. None of the loans with which he was connected were ever repudiated; and when the crash of that sad period came, the great Hebrew looked coldly and calmly on, and congratulated himself on his caution. At his counting-house, a fair price might be procured for any amount of stock, which, at a critical time, would have depressed the public market; and it was no uncommon circumstance for brokers to apply at the office of Mr. Rothschild, instead of going in the Stock Exchange. He has, however, been occasionally surpassed in cunning; and on one occasion a great banker lent Rothschild a million and a half on the security of consols, the price of which was then 84. The terms on which the money was lent were simple. If the price reached 74, the banker might claim the stock at 70; but Rothschild felt satisfied that, with so large a sum out of the market, the bargain was tolerably safe. The banker, however, as much a Jew as Rothschild, had a plan of his own. He immediately began selling the consols received from the latter, together with a similar amount in his own possession. The funds dropped; the Stock Exchange grew alarmed; other circumstances tended to depress it; the fatal price of 74 was reached; and the Christian banker had the satisfaction of outwitting the Hebrew loanmonger. But, if sometimes outwitted himself, there is little doubt he made others pay for it; and, on one occasion, it is reported that his finesse proved too great for the authorities of the Bank of England. Mr. Rothschild was in want of bullion, and went to the governor to procure on loan a portion of the superfluous store. His wishes were met; the terms were agreed on; the period was named for its return; and the affair finished for the time. The gold was used by the financier; his end was answered, and the day arrived on which he was to return the borrowed metal. Punctual to the time appointed, Mr. Rothschild entered; and those who remember his personal appearance may imagine the

the planter much goes to the payment of taxes for the maintenance of those who are reduced by the system to a state of pauperism—much to the government, which taxes every note, bill or bond—servants, horses, carriages, &c. &c. Vast sums go to the maintenance of lawyers and conveyancers, to that of stock-gamblers and speculators, and much is lost by failures of every kind, the natural results of a gambling trade. The result is, that the cotton which yields the planter, on his plantation, but five cents per pound, and is sold in Liverpool at four-pence halfpenny per pound, is sold by the mill owner at a shilling,* and yet the reward of the labour employed in converting it into cloth is not two-pence, and probably little more than a penny per pound. It is so obviously the interest of mill owners to obtain large allowances for the use of machinery, that it cannot be doubted they will continue to pursue this course, and to make every effort that may be necessary to continue to themselves the control of the cotton market. That control depends upon continuing the monopoly of machinery; and the moment that monopoly shall be broken up, and machinery shall become so abundant elsewhere as to relieve the planter from the necessity for *seeking* a market, the power of taxation will pass away, cloth will be cheap, consumption will be trebled, and the producer will grow rich.

We may now, for a moment, look to the manner in which the sugar-planter is taxed. The quantity of sugar entered for home consumption in 1847 was 5,800,000 cwt., and the average price was about 25s. per cwt., of which at least one-fourth, and very probably one-third, went to pay the cost of transportation in and from India, the Isle of France, Brazil, Cuba, Jamaica, &c., storage, commission, &c.

Allowing it to have been three-tenths, the planter had at his command about £5,000,000

The price of iron was £9, 12s. and if we now add to this for the transportation to Cuba, Brazil, India, &c., and from the port to the plantation, only £1, 8s. we have £11 as the cost of a ton, at which rate 450,000 tons would amount to £4,950,000 and if the account were more accurately made up, it would not probably amount to 400,000 tons.

To add that quantity in a single year to the product of iron in this country, would not require the slightest exertion, and yet we see here that in return for it, small as it was, England obtained, in 1847, more than one-fourth of the products of the labour of all the sugar-producing countries of the globe! A very slight examination of this statement will show in what manner the people of the world are taxed for the maintenance of iron-manufacturers, railroad speculators, and the host of middle-men, with whom England so much abounds. Her producers are few, and her consumers are many, and the materials for their consumption are obtained by means of a system of taxation the most extraordinary that the world has yet seen.

The object of protection is not only to rescue ourselves from the necessity of contributing to the maintenance of such a system, but also to facilitate the process of emigration from lands so taxed, adding to the value of the people who remain, by diminishing the supply of men in market, and com-

cunning twinkle of his small, quick eye, as, ushered into the presence of the governor, he handed the borrowed amount in bank notes. He was reminded of his agreement, and the necessity of bullion was urged. His reply was worthy of a commercial Talleyrand. 'Very well, gentlemen. Give me the notes. I dare say your cashier will honour them with gold from your vaults, and then I can return you bullion.' To such a speech, the only worthy reply was a scornful silence."

* The piece which sold at 6s. 7d. required to produce it about 6½ pounds of cotton. The price was thus almost exactly a shilling per pound.

selling those who desire to purchase labour to give for it the proper equivalent in food and raiment, which now they do not. With every step in that direction, their power to produce iron and to consume food and clothing must grow, and the power to maintain commerce must increase.

We have seen that iron was much more costly in 1845-6 than from 1827 to '34. In opposition to this unquestionable fact, the late Secretary of the Treasury asserted that, "experience proves that from improved machinery, new inventions and reduced cost of production, the foreign articles are constantly diminishing in price."* In opposition to this we have the fact that not only was iron higher but cotton was lower. The man who gave two pounds of cotton in 1845-6 for less iron than he could have had in 1833-4 for one, found that the price of iron was increasing and not diminishing, and that it was far more difficult than in the former period to obtain what he needed for the construction of machinery. His wages in iron were thus reduced, and his power to accumulate capital was reduced; whereas, if he had made his exchanges on the spot with the producer of iron, both would have grown. Nevertheless we are told by the same authority that the necessary consequence of the protective system is, that "wages throughout the country became lower than before, because the aggregate profits of the capital of the nation engaged in all its industry is diminished."† It is deemed most profitable to trade with those nations whose labour is low, and the lower it is "the greater is our gain in the exchange." The labour of Great Britain is lower than it was fifteen years since, because it is less productive, and the less her people produce, the less they have to give us in exchange for our products; the consequence of which is, that we give more cotton for less iron. If all the people of England were to work, they would produce far more cloth and iron; wages would then rise, and the equivalent of a bale of cotton in iron would be doubled. The more productively the people of the world are employed, the greater will be the value of their labour, and the larger will be the quantity of good things that we shall obtain in exchange for our labour. The larger their armies, the more destructive their wars, the more numerous their revolutions, the more their money-spending classes, paupers and noblemen, abound, the smaller will be the value of labour abroad, the smaller will be their power to maintain commerce, and the smaller will be the advantage to those who trade with them; for the less silk or iron they produce, the more food or cotton must be given them as the equivalent of similar quantities.

The document to which I have above referred belongs to the school of discords; that which teaches to buy in the cheapest and sell in the dearest market, and sees great advantage to be gained by reducing the cotton of the poor Hindoo to a penny a pound, careless of the fact that famine and pestilence follow in the train of such a system. The policy that produces a *necessity* for depending on trade with people who are poorer than ourselves tends to reduce the wages of our labour to a level with theirs, and to diminish commerce. That which should give us *power* to trade with nations who might be richer than ourselves would tend to raise our wages to a level with theirs. By bringing the Irishman here, and enabling him to make his exchanges with us, we raise him to our level as a producer. By exporting our people to Ireland, and compelling them to make their exchanges there, we should sink their wages to a level with those of that country. The policy that brings people here and raises them in the scale of civilization, is that which promotes commerce. That which causes them to return home, and thus arrests the tide of immigration, preventing advance in civilization, is the one which diminishes commerce.

* Report, December, 1848.

† Ibid.

CHAPTER SEVENTH.

HOW PROTECTION AFFECTS THE QUANTITY AND QUALITY OF THE MACHINERY OF PRODUCTION.

THE object sought to be accomplished is the improvement of the condition of man. The mode by which it is to be accomplished is that of increasing his productive power. The more food a man can raise, the more and better food may he consume, and the larger will be the surplus that can be appropriated to the purchase of clothing, to the education of his family, to the enlargement of his house, or to the improvement of his machinery, and the greater will be the amount of leisure that can be appropriated to the improvement of his modes of thought.

The better his machinery, and the more readily it can be obtained, the larger will be his production. Machinery consists chiefly of iron, and the more readily that can be obtained, the more rapid will be the increase of production and the improvement of the physical, moral, intellectual and political capacities of man. It is the great instrument of civilization.

The more durable his work, the more rapidly will his capital increase. Where iron is abundant it is substituted for wood in the building of houses, which are thus secured from fire, and in the construction of ships and roads, by which transportation is improved—and with each such step his powers of production are increased.

That he may obtain iron readily, he must have the command of fuel, obtainable at moderate cost of labour—in other words, cheaply—for things are cheap or dear not in proportion to their money-price, but to the quantity of labour required for obtaining them. The money-price of grain, in Ireland, is less than in England, yet the cost in labour is so great that the poor cultivator eats still poorer potatoes. The money-price of coal is less than it was two years since, yet the consumption has diminished, because the labour-price has risen. The money-price of cotton in those parts of India in which it is raised, is about two cents per pound, yet the man who raises it covers his loins with a rag, dispensing with clothing for the rest of his body, because the labour-price of cloth is great. Where production is small, the labour-price of commodities is high, and consumption is very small; and *vice versa*, where production is large, the labour-price of commodities is low, and consumption is great.

Large production requires good and cheap machinery, and that we may obtain such machinery, we must have good and cheap fuel. Abundance of fuel and iron are the foundation upon which civilization must rest, and whatever the course of policy that tends most to facilitate their acquisition, that is the one which must tend most rapidly to augment the productive power of man, and to increase his power and his capacity for improvement.

Iron ore and fuel exist throughout this country in such profusion as is elsewhere unknown. Nowhere in the world can they be so readily obtained—nowhere so easily brought into combination with each other. The anthracite of Pennsylvania is the best fuel in the world, and it can be mined as cheaply as any other. It is interstratified with iron ore in great abundance. Limestone underlies the whole of the great Schuylkill region, and it may be obtained with as little labour as anywhere in the world. The ores and fuel of Ohio and the West are thus described:—

The beds of ore are easy of access, being and associated with materials necessary for its reduction, cannot fail to be of immense sources of wealth. Most of the working-beds of ore are above the first workable bed of coal. The amount of workable ore in Muskingum county is estimated at 153,600,000 cubic yards, which, when melted, will yield about

half that number of tons, in pigs. We need not now speak of localities. Mr. Briggs closes his report on iron ore as follows :—"A very low calculation of the amount of good iron ore in the region which has this season been explored, is equal to a solid, unbroken stratum, sixty miles in length, sixty miles in width, and three feet in thickness. A square mile of this layer, being equivalent in round numbers to three millions cubic yards, when melted, will yield as many tons of pig iron. This number, multiplied by the number of square miles in the stratum, will give 1,080,000,000 tons; which, from three counties alone, will yield annually, for 2700 years, 400,000 tons of iron—more than equal to the greatest amount made in England previous to the year 1829."—*Ohio Paper*.

The country bordering on Carp River (Lake Superior) is, perhaps, the richest on the globe for its iron ore. The "Jackson Iron Company," whose location we had the pleasure of visiting, is situated some twelve miles from the Lake Shore, and about three miles from the iron mountains. One of these mountains belongs to the above-named company, and the other to the "Cleveland Iron Company." These two mountains, as we were informed, are by far the richest and most valuable of any iron deposit that have been discovered—though it is said that more or less iron ore is found spread over some seventeen or eighteen townships between Lake Superior and Green Bay. This ore contains from 75 to 90 per cent. of pure iron, and metal made from it by the Jackson Company has been submitted to the severest tests, and proves to be of the very best quality of iron that is made in any part of the world, having been drawn down to the size of No. 36 wire. The Jackson Iron Company (under the superintendence of P. M. Everett, Esq., who we now understand leaves, and is succeeded by Czar Jones, Esq., of Jackson) has been making iron for some twelve or eighteen months.—*Lake Superior News*.

Such being the case, we might suppose that the consumption of fuel and iron would be great, but such has not been the case.

In 1810, the domestic manufacture amounted to only 50,000 tons. In 1828, it had reached 100,000. In 1818, '19, '20, it may perhaps have reached 70,000, but even that is very doubtful. The total importation of bar and pig iron in those years was 40,000 tons, or 13,333 per annum. The import of manufactured articles of iron may have been half as much, and this would give a consumption of 90,000 tons, or 200,000,000 of pounds for a population of 9,400,000 persons, being a little over 20 pounds per head. The average consumption of the Union for all purposes, for house-building and ship-building, for agricultural implements, and for machinery of every description, was equal, therefore, to little more than twice the weight of an axe per head per annum, and yet there existed, as there now exists, a capacity to produce iron at less cost of labour than anywhere in the world. If we desire now to understand the cause of this, it may be found in the fact that up to the Revolution, the manufacture of iron, even that of horse-shoe nails, was prohibited, and there existed no inducement to erect works for the smelting of the ore, when the pig could not be used. The consequence was, that it did not grow with its natural growth, while that of England was forced forward, and when the day of nominal independence arrived, that of real independence was still far distant. Under the various tariffs from 1789 to 1812, the duties were ad-valorem, commencing with $7\frac{1}{2}$ per cent. and gradually rising until they had attained, before the war of 1812, $17\frac{1}{2}$ per cent. The production of iron had made no progress, and the whole supply had to be sought abroad, the consequence of which was that it was scarce and dear. Embargo, non-intercourse, and war raised the price so high that furnaces were built in considerable numbers; but with the peace, the duties on manufactured iron were reduced to 20 per cent. The demand for pig iron was thus diminished, and the price in Pittsburgh, which had been \$60, fell in 1820 and 1821 to \$20, the consequence of which was the ruin of nearly all engaged in its production. This, however, was not a consequence of reduction of duty. At that very time the duty on pigs was \$10, and on bars \$30 per ton, and thus the selling price at that place was *far less than the freight and duty on imported iron*. Iron was nominally cheap, but

really dear: so dear that consumption was destroyed. Labour was at \$6 per month, and wheat sold for 25 cents a bushel, and thus was produced so total an inability to consume this most necessary of all commodities, that although the furnaces were closed, the whole import of pig and rolled iron in 1821, was but 4000 tons, or one ton to every 2,500 persons. It may be doubted if the consumption of that year exceeded six pounds per head. We see thus that the power to import disappeared with the power to produce, as has already been shown to have been the case on other occasions.

Who, now, were the losers by the greatly increased difficulty of obtaining this great instrument of civilization? To answer this question, we must first inquire who are the great consumers of iron? The farmers and planters constitute three-fourths of the population of the nation, and if the loss were equally distributed, that portion of the loss would fall upon them; but we shall find upon inquiry that it is upon them, the producers of all we consume, that the whole of it must fall.

The farmer needs iron for his spades and ploughs, his shovels and his dung-forks, his trace-chains and horse-shoes, and his wagon-wheels; for his house, his barn, and his stable. He needs them, too, for his timber. If iron be abundant, saws are readily obtained, and the saw-miller takes his place by his side, and he has his timber converted into plank at the cost of less labour than was before required to haul the logs to the distant saw-mill. He obtains the use of mill-saws cheap. If iron be abundant, the grist-mill comes to his neighbourhood, and now he has his grain converted into flour, giving for the work less grain than was before consumed by the horses and men employed in carrying it to the distant mill. If iron be abundant, spades and picks are readily obtained, and the roads are mended, and he passes more readily to the distant market. If iron increase in abundance, the railroad enables him to pass with increased facility, himself, his turnips and potatoes, to markets from which before he was entirely shut out by cost of transportation, except as regarded articles of small bulk and much value—wheat and cotton. If iron be abundant, the woollen-mill comes, and his wool is converted on the spot by men who eat on the ground his cabbages and his veal, and drink his milk, and perform the work of conversion in return for services and things that would have been lost had they not been thus consumed. At each step he gets the use of iron cheaper—that is, at less cost of labour. If iron be abundant, the cotton-mill now comes, and the iron road now brings the cotton, and his sons and his daughters obtain the use of iron spindles and iron looms by which they are enabled to clothe themselves at one-twentieth of the cost of labour that had been necessary but twenty years before. Instead of a yard of cotton received in return for two bushels of corn, one bushel of corn pays for six yards of cloth—and now it is that the farmer grows rich.

A careful examination of society will satisfy the inquirer that all the people engaged in the work of transportation, conversion, and exchange, are but the agents of the producers, and live out of the commodities they produce, and that the producers grow rich or remain poor precisely as they are required to employ less or more persons in the making of their exchanges. The farmer who is compelled to resort to the distant mill employs many persons, horses and wagons, in the work of converting his grain into flour, and his land is of small value. Bring the mill close to him, and a single horse and cart, occasionally employed, will do the work. The farmer who employs the people of England to produce his iron, is obliged to have the services of numerous persons, of ships and wagons, and horses, to aid in the work. Bring the furnace to his side, and let his neighbour get out his iron, and he and his sons do much of the work themselves, furnishing

timber, ore, and the use of horses, wagons, &c., when not needed on the farm.

The man of Tennessee sends to market 300 bushels of corn, for which he receives in return one ton of iron, the money-cost of which is \$60, but the labour-cost of which is the cultivation of ten acres of land. If he could follow his corn, he would find that the men who get out his iron receive but 30 or 40 bushels, and that the remaining 260 or 270 are swallowed up by the numerous transporters and exchangers that stand between himself and the men whom he thus employs. If, now, he could bring those men to his side, giving them double wages, say sixty bushels of corn, he would be a gainer to the extent of 240 bushels. While he has to give 300 bushels, his iron is dear, and he can use little. When he obtains it for 60 bushels it is cheap, and he uses much. His production increases, and his ability to use iron increases with it, and the demand for workers in iron increases, and all obtain food more readily, the consequence of which is that they have more to spare for clothing, and for other of the comforts or the luxuries of life.

Whenever there is in market a surplus of any commodity, the whole quantity tends to fall to the level of the lowest price required to enable the holders to find purchasers, and so long as we shall continue to have a surplus of food for export, the price of the whole must continue to be regulated by that which can be obtained for the trivial quantity sent to Liverpool.

Whenever it is necessary to resort to distant places to procure a part of the supply of any commodity, the price of the whole is regulated by the cost of obtaining this last small portion. In 1847, we produced 800,000 tons of iron, yet the demand was so much in advance of the supply that we were obliged to import a small quantity, and the price at which that was obtained fixed the price of the whole. The farmer is thus always selling in the cheapest and buying in the dearest market. The labour and capital required to produce a ton of iron, are not as great as are needed for the production of forty bushels of corn, and yet he gives for it three hundred, because of the quantity of labour wasted in transporting the one to the man who produces the other.

The prices of labour and iron are both higher than in Europe, and therefore we import both. The price of food is lower than in Europe, and therefore we export it. Whenever the import of labour shall be such as to do away with the *necessity* for exporting food, as food, its price will be high, and we shall cease to export it. Whenever the import of men shall be such as to do away with the *necessity* for importing iron, the price will be low, and we shall export food in the form of iron. By the same operation the farmer will thus be enabled to obtain high prices for his grain, and to buy his iron cheap. He will then buy in the cheapest and sell in the dearest market, and the value of his labour will be increased.

We have seen that in the period that elapsed between 1821 and 1829, embracing the six years which followed the passage of the act of 1824, the consumption of iron rose to about 25 pounds per head. In the three following years, under the tariff of 1828, it rose to 47. By the Compromise Act, the duty on railroad iron was abolished, and the consequence was, that the power of consumption diminished, remaining at an average of but 46 pounds for the next nine years. Under the strictly revenue clauses of the tariff it fell to 38 pounds, being less than the consumption of eleven years before. By 1846, it had risen to 94, and in the following year it rose to 98. Who were the persons that benefited by this change? Let us see. The abundance of iron facilitated the opening of coal mines by means of steam-engines and other machinery, and the making of roads, by means of which coal, and food,

and timber could be taken to market, and thus greatly diminished the number of persons intermediate between the producer and consumer; and the abundance of fuel and iron facilitated the construction of steamboats, diminishing greatly the cost of transportation to and from market; and facilitated the construction of mills and furnaces, at which the farmers and planters could make their own exchanges; while the increased facility of obtaining ploughs and harrows, spades and axes, tended to increase the productiveness of labour, with large increase in the quantities to be exchanged, and in this manner the whole benefit resulting from the augmented facility of obtaining iron went to the cultivators of the land, farmers and planters.

But why should protection have been necessary to produce this result? To the general reasons already given, may now be added, those which refer particularly to iron. In a table now before me,* the English prices of merchant-bar iron are thus given:—

£	s.	£	s.	£	s.	£	s.	£	s.	£	s.
1816—11	0 @	8	15	1827—9	10 @	8	15	1837—10	5 @	6	15
1817—8	10 @	13	0	1828—9	0 @	7	15	1838—9	10 @	9	15
1818—12	0 @	10	0	1829—7	10 @	6	12	1839—10	5 @	9	10
1819—11	10 @	11	0	1830—6	15 @	6	5	1840—9	0 @	8	0
1820—10	10 @	9	10	1831—6	5 @	5	17	1841—7	15 @	0	0
1821—9	10 @	8	15	1832—6	5 @	5	10	1842—6	10 @	5	5
1822—8	10 @	8	0	1833—6	15 @	7	15	1843—5	0 @	4	10
1824—13	0 @	8	15	1834—6	10 @	7	12	1844—6	6 @	5	0
1825—15	0 @	11	10	1835—8	5 @	6	5	1845—6	10 @	9	0
1826—11	0 @	9	10	1836—11	10 @	10	5	1846—9	0		

We have here £4 10=\$21 60, and £15=\$72, and every price between. Why should these enormous variations take place? It costs no more labour to make iron at one time than at another. The man who mined a ton of ore or coal in 1832, when the price was £5 10, could mine more than a ton in 1846, because machinery had been greatly improved, and yet the price was then £9.

The season may be adverse for the growth of grain or cotton, and the rot may destroy the potato crop, thus diminishing the quantity to be supplied with great increase of price, and yet neither food nor cotton is liable to the enormous and sudden changes that we see in regard to iron, which ought to be perfectly steady. These changes are due to the unsound character of the system, and the perpetual changes that result therefrom. The consequence of them is, the constant recurrence of ruin to all, in other countries engaged in the manufacture of iron. In 1816 it was high, and furnaces were built. In 1821, it was low, and iron-masters were everywhere ruined. In 1825 it was high, and furnaces were again put in blast. In 1831, furnace-masters were again ruined. In 1836 it was high, and in 1842, it was low, and on both occasions the same operations were repeated. So again in 1846, furnaces were built, and now, in 1849, they are being closed.

The consequence of this is that the iron manufacture throughout the country is in a barbarous condition. Small furnaces abound, at which much labour is given to producing little iron. At each forced intermission of the exertions of England to maintain the monopoly of the production of this important commodity, we can see it making its way gradually to the land where alone it can be produced at small cost of labour—that land where ore, coal, and limestone are interstratified with each other, and at which it would long since have arrived but for our frequent changes of policy.

* Merchants' Magazine, Vol. XX. p. 337.

Very little examination is necessary to satisfy the inquirer that it has been precisely when iron has been lowest in England, in 1822 and 1843, that our consumption was least; and it is now diminishing rapidly, as our furnaces are being closed and their owners ruined. *The power to consume declines daily.* With another year or two the price abroad will be high, but time will then be required to get the old furnaces into operation, and still longer to build new ones; for iron-making is like buying lottery tickets, and the blanks are more numerous than the prizes. That time arrived, pig iron may be again \$40 and bars \$80 per ton.

So long as a nation is dependent on England for any portion of its supply, so long must prices continue to be thus variable, and so long must the consumption of this important article, and the facilities for producing it, be small, and all the deficiency falls on the producer of food, or wool, or cotton; for it is he that pays the cost of transportation, conversion and exchange. The consumption of the present year will not, probably, exceed 700,000 tons, for the make at home is greatly diminished, and the stock on hand has increased to an extent nearly approaching that of the import from abroad. Next year, there is strong reason for believing that it will be still farther diminished, whereas, there can be no doubt that that year, had the system of 1842 remained unchanged, would have seen the domestic product attain 1,300,000 tons, or 3,000,000,000 of pounds, being 125 pounds per head; the *increase* for 1846 having been almost equal to the whole consumption, per head, in 1842-3. Thenceforth, the price would have been regulated by the cost of production here, and not by the fluctuations of policy abroad; and thenceforth the prices would have been daily diminishing, as the machinery of production improved. The object of the colonial system is that of increasing the number of transporters, converters and exchangers, who are to be supported out of the labours of the farmers and planters. The object of the protective system is to diminish the number; and the question now to be settled is, whether the labourers, the men who produce all that we consume, or the exchangers shall be masters. Were the latter to succeed, we should have perfect freedom of trade, so far as freedom consists in being compelled to forego the association of men with their fellow-men for the improvement of their condition, and the result would be the stoppage of every furnace in the Union; when all those engaged in mining coal and ore would be compelled to resort to the raising of food, which would be lower, while iron would be higher and greatly higher. Its cost in labour would be so far increased that consumption would fall to the point at which it stood in 1821. Perfect protection would soon quadruple our production, and vast numbers of persons would mine iron and coal instead of raising food, which would be higher. The labour-cost of iron would be diminished, and the consumption would be increased; and it is by aid of iron that production is to be increased, exchanges facilitated, conversion improved, land increased in value, and farmers and planters made rich.

From 1829 to 1832, the domestic production increased about fifty per cent. During the whole of that period, the Union was agitated by threats of nullification and disunion, and there existed no motive for investing in furnaces or rolling-mills the large amounts required for the cheap production of this important commodity. From 1842 to 1847, the production trebled, and perhaps quadrupled. During the intermediate period it was almost stationary.

I propose to inquire what would have been the result, had the production gone on to increase at the rate of only 15 per cent. per annum, and then to examine what would have been the effect on the working men, the planters and

farmers of the Union, with a view to ascertain from the experience of the past what is probably the true course of policy for the future.

Starting with 200,000 tons in 1832, and increasing the product 15 per cent, the succeeding years would have been as follows:—

Years.	1000 tons.	Years.	1000 tons.	Years.	1000 tons.
1833 . .	230	1839 . .	532	1845 . .	1230
1834 . .	265	1840 . .	612	1846 . .	1415
1835 . .	305	1841 . .	704	1847 . .	1630
1836 . .	350	1842 . .	810	1848 . .	1875
1837 . .	402	1843 . .	930	1849 . .	2150
1838 . .	462	1844 . .	1070	1850 . .	2472

It will be seen that the highest increase of any year is scarcely more than that which actually took place in years between 1843 and 1847, when every thing had to be recommenced, after a state of almost utter ruin. What now would have been the amount of investment required for the production of this quantity of pig-metal? A furnace capable of producing 5000 tons per week may cost \$30,000. We can now produce 800,000 tons. To have made it 2,000,000 would have required the building of 240 furnaces more than we have built, and their construction would have required \$8,000,000, being far less than the amount that has in that period been spent in building packet ships to run between New York, London, and Liverpool,—leaving out of view all other expenditure upon shipping, whether for building or sailing them. The ships have disappeared, or will disappear, leaving nothing behind. The furnaces would be still in existence. At one establishment in Pennsylvania there are six furnaces capable of producing 800 tons of metal per week, or 41,600 tons per annum. The cost of these may have been \$200,000. To build ships capable of transporting that quantity would require an investment of at least \$750,000. At the end of a few years, the whole of that capital would be sunk, while the furnaces might last almost for centuries. The tendency of the colonial system is thus to compel the employment of capital in temporary machinery, and the object of protection is to enable the owner of it to invest it in that which is permanent.

It will be asked, what should we have done with all this iron? In answer, I say, that every man is a consumer to the full extent of his production. The man who made the iron would have required food, fuel and clothing. The man who mined the fuel would have required iron, food and clothing. The man who raised the food would have required iron, fuel and clothing. The man who made the clothing would have required iron, food and fuel. The man who raised the wool and the cotton would have required food, fuel, iron, and clothing. Production would have largely increased, and there would have been a large increase in the power of consuming all the commodities necessary for the convenience and comfort of man. In other words, there would have been a great increase in the profits of capital and the wages of labour.

Had production gone on at the rate I have indicated, we should have in the period from 1834 to the present time 15,000,000 of tons, whereas we have had but 5,000,000. These 10,000,000 would have filled the country with machinery, enabling the farmers and planters to have the consumers by their sides, and in addition would have given them roads by which to go to market at half the present cost. Their necessity for going to distant markets would have diminished, while their power so to do would have increased, and with every step in this progress they would have become enriched.

It may, perhaps, be said that this demand for labour would have dimin-

ished the power to produce food and cotton. On the contrary, it would have increased it. Two-thirds of the labour actually employed in the making of this iron and its conversion into the various forms to fit it for use, would have been saved labour—labour that has been wasted. Further, the farmer and planter would have exchanged their food and cotton on the spot for iron, and here would have been a further and vast saving of labour. The increased facility of obtaining spades and hoes, ploughs and harrows, horse-shoes, carts and wagons, would have rendered the labour on the farm or plantation more productive. The rapid growth of railroads would have prevented the necessity for going to market with produce, and facilitated the transport of manure, and marl, and lime, and thus the power to apply labour steadily and advantageously would have largely increased. The neighbouring cotton-mill or woollens-mill would have furnished clothing for food and labour, and thus the necessity for looking to distant markets would have been diminished, while the power to resort to them would have largely increased. The increased demand for labour and its increased reward, would have tended largely to augment immigration, and each new arrival would have been a mouth to be fed and a back to be clothed, to the advantage of both farmer and planter. Farms and plantations would have been divided, and more food and cotton would have been obtained from small ones than are now obtained from large ones. The land would have increased in value, and the farmers and planters would have grown rich because of increased production and diminished cost of exchange, and a part of the surplus would have been appropriated to the purchase of books and newspapers, and musical instruments and pictures, and thus would intellectual have kept pace with moral and physical improvement. Instead of all this, the period from 1835 to 1843 was one of diminished production and increasing poverty and crime, ending with bankruptcy and repudiation.

What has been said in regard to iron is equally true in regard to coal, but it is unnecessary to go into detail. Had the tariff of 1828 been adopted as the settled policy of the nation, the consumption of anthracite would by this time have reached 10,000,000 of tons, and the vast coal fields of the West would likewise be giving forth their products by millions, and thus the food of the farm would have been condensed into fuel and iron, fitting it for transportation, and providing means of transportation. Instead of this, we have had a series of changes that have involved in ruin almost all that have been largely interested in giving to the nation the extraordinary works that connect Philadelphia and New York with the great coal region of Pennsylvania, and State bankruptcy and repudiation have been followed by that of companies which have done more for the real advantage of the Union than any others that have ever existed within its limits, and all this has been produced by a policy under which the whole consumption of iron was reduced below 40 pounds per head, when it might long since have reached 300.

Had the production of iron and coal been allowed to increase, and the manufacture of cotton to grow, we should be now consuming a million and a half of bales; and had the woollens manufacture been allowed to grow, we should now have a hundred millions of sheep, the whole of whose wool would be required for our domestic consumption, for those who produce largely consume largely.

The perfect harmony of interests is nowhere more perfectly exhibited than in a thorough examination of the course of proceeding in relation to both coal and iron. Both were heavily protected from 1816 to 1824, but neither grew, because the iron *manufacture*, the cotton and the woollen manufactures, did not grow; and so would it now be, were iron and coal protected at the cost of cotton and wool. All wax and wane together, and the

man who would protect himself at the cost of his neighbour, makes a sad mistake. It is useless to produce iron without a market, and that market is to be found in the rolling-mill, the foundery, the machine-shop, the cutler's shop and that of the axe-maker, and they in turn must find a market among the producers of food, and wool, and cotton. The shipwright uses largely of iron, and that he may do so, there must be a large market for sugar, tea, coffee, and other of the luxuries and comforts of life. The larger the market, the larger will be the consumption of iron, and the larger the latter, the more rapidly will the former grow. In a wise political economy there will be found no discords.

CHAPTER EIGHTH.

HOW PROTECTION AFFECTS POPULATION.

COMBINATION of action is indispensable to increase in the value of labour. The first cultivator can neither roll nor raise a log, with which to build himself a house. He makes himself a hole in the ground, which serves in lieu of one. He cultivates the poor soil of the hills to obtain a little corn, with which to eke out the supply of food derived from snaring the game in his neighbourhood. His winter's supply is deposited in another hole, liable to injury from the water which filters through the light soil into which alone he can penetrate. He is in hourly danger of starvation. At length, however, his sons grow up. They combine their exertions with his, and now obtain something like an axe and a spade. They can sink deeper into the soil; and can cut logs, and build something like a house. They obtain more corn and more game, and they can preserve it better. The danger of starvation is diminished. Being no longer forced to depend for fuel upon the decayed wood which alone their father could use, they are in less danger of perishing from cold in the elevated ground which, from necessity, they occupy. With the growth of the family new soils are cultivated, each in succession yielding a larger return to labour, and they obtain a constantly increasing supply of the necessities of life from a surface diminishing in its ratio to the number to be fed; and thus with every increase in the return to their labour the power of combining their exertions is increased.

If we look now to the solitary settler of the West, even where provided with both axe and spade, we shall see him obtaining, with extreme difficulty, the commonest log hut. A neighbour arrives, and their combined efforts produce a new house with less than half the labour required for the first. That neighbour brings a horse, and he makes something like a cart. The product of their labour is now ten times greater than was that of the first man working by himself. More neighbours come, and new houses are wanted. A "bee" is made, and by the combined effort of the neighbourhood the third house is completed in a day; whereas the first cost months, and the second weeks, of far more severe exertion. These new neighbours have brought ploughs and horses, and now better soils are cultivated and the product of labour is again increased, as is the power to preserve the surplus for winter's use. The path becomes a road. Exchanges begin. The store makes its appearance. Labour is rewarded by larger returns, because aided by better machinery applied to better soils. The town grows up. Each successive addition to the population brings a consumer and a producer. The shoemaker wants leather and corn in exchange for his shoes. The blacksmith requires fuel and food, and the farmer wants shoes for his horses; and with the increasing facility of exchange more labour is applied to production, and the reward of labour rises, producing new wants, and requiring more and larger exchanges. The road becomes

a turnpike, and the wagon and horses are seen upon it. The town becomes a city, and better soils are cultivated for the supply of its markets, while the railroad facilitates exchanges with towns and cities more distant. The tendency to union and to combination of exertion thus grows with the growth of wealth. In a state of extreme poverty it cannot be developed. The insignificant tribe of savages that starves on the product of the upper soil of hundreds of thousands of acres of land, looks with jealous eyes on every intruder, knowing that each new mouth requiring to be fed tends to increase the difficulty of obtaining subsistence; whereas the farmer rejoices in the arrival of the blacksmith and the shoemaker, because they come to eat on the spot the corn which heretofore he has carried ten, twenty, or thirty miles to market, to exchange for shoes for himself and his horses. With each new consumer of his products that arrives he is enabled more and more to concentrate his action and his thoughts upon his home, while each new arrival tends to increase his *power* of consuming commodities brought from a distance, because it tends to diminish his *necessity* for seeking at a distance a market for the produce of his farm. Give to the poor tribe spades, and the knowledge how to use them, and the power of association will begin. The supply of food becoming more abundant, they hail the arrival of the stranger who brings them knives and clothing to be exchanged for skins and corn; wealth grows, and the habit of association—the first step towards civilization—arises.

It is not good for man to be alone, and yet throughout this country, we find thousands and tens of thousands of men flying to the West, there to commence the work of cultivation at a distance from their fellow-men, while millions upon millions of acres of rich land in the old States remain untouched. If, now, we refer to the course of events during the last thirty years, we see that the tendency to migration increased rapidly between 1834 and 1842, when the building of mills and furnaces ceased, and that during that period we colonized Texas and Oregon. In the years which followed, the tendency to emigrate diminished, to break out afresh under the influence of the policy of 1846. The last twelve months have witnessed the departure of very many thousands to California, Santa Fe, &c., while the emigration to Iowa, Wisconsin, and other portions of the extensive West, is entirely without precedent.

"It is estimated," says the editor of one of the Iowa papers,

"That between fourteen and fifteen hundred wagons have crossed the Mississippi at this place, within the last five weeks, bringing emigrants from Ohio, Indiana and Illinois, and all of them seeking homes in Iowa. They have," says he, "generally gone to the new counties on and west of the Des Moines river, where, we know, they will find lands and other agricultural advantages, equal to any in the world. Allowing five persons to a wagon, there have crossed at this place alone, between 7000 and 8000 persons. We are told that the same extraordinary influx of immigrants has taken place at all the other crossings along the river Dubuque, down to Keokuk. It is, therefore, reasonable to suppose that from 30,000 to 50,000 persons have been added to our population within the last month and a half, and the tide is still pressing towards us."*

If we desire to find the reason for the extraordinary tendency now prevailing to seek the West, it may be found in the diminishing value of labour in the older States. The production of iron, coal, cotton and woollen cloths, and of commodities generally, has diminished; and there is not only no demand for labour in the construction of new mills and furnaces, or in the opening of new coal mines, but the number of persons employed is actually diminished. The natural increase of our population is almost 600,000, and the immigration of the present year is about 300,000; and thus 900,000

* Burlington (Iowa) Gazette.
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persons are added, while the number that can find employment in the old States is less than it was two years since. All these people must eat, and if they cannot obtain food in exchange for labour, employed in the mining of coal or manufacture of cloth or iron, they must raise it for themselves, and hence it is that the population of the new States grows now so rapidly.

Here is a case of apparent discord. The people of the new States need neighbours to help them to make roads and build churches and school-houses, and the state of things that injures the farmers of Pennsylvania, New York and Virginia, benefits all those who are already in Wisconsin and Iowa. They profit by free-trade and would be injured by protection. Strange as it may seem, however, directly the reverse is the case. The harmony of interests is perfect, and the discord is only apparent. The new States would grow faster under protection than they now do under free-trade. But for the abolition of protection, in 1832-3, Iowa, Wisconsin, &c., would now be populous States, as I propose now to show. From 1821 to 1825, there existed no inducement for emigration from Europe to this country. Wages here were low, and the difficulty of obtaining employment was great. The average number of immigrants was but 7138, and the last year was little more than the average. By 1829, it reached 24,000. Five years after, (1834,) it was 65,000. The average of the next nine years was but 72,000; and, in the last of those years, it was but 75,179. Like every thing else, immigration was stationary. In the four following years it was trebled. This year it may reach 200,000. It has already begun to decline.

It is obvious that the demand for labour grows with increase in the number of modes in which it can be applied; and that with every step in that direction the return to labour increases, enabling the labourer to obtain larger wages—that is to say, more food, fuel, clothing, books and newspapers, and greater facilities for the education of his children, in return to the same labour. We see that the power to obtain these good things increased rapidly from 1830 to 1834, and that the effect was to produce a vast increase of immigration. With every such increase there must, necessarily, have been increased power of combination, accompanied by increased facilities for obtaining the things for which men are willing to labour; offering new attractions for the labourer, and producing a further increased tendency in the same direction. In a former chapter, I have supposed that it might by this time have reached 1,000,000 per annum, and that it would have done had it doubled but once in four years. A duplication in three years would have brought it by this time to 2,000,000. Taking it, however, at the former quantity, we should have imported in the intermediate period nearly 6,000,000, instead of less than 2,000,000. If we now add thereto the natural increase of all these people, we would have at this moment a population exceeding by at least 5,000,000 the number we now have; and of these, while vast numbers would have been employed in giving value to the lands of the older States, by opening mines and building furnaces, millions would have sought the West, the access to which would have been rendered daily more and more easy by the increased facility of obtaining iron for the construction of steam-boats and rail-roads.

The large immigration of the last and previous years is by many ascribed to the troubles in Europe; but their effect has been small. All commodities tend to seek the best market, and to this rule labour forms no exception. The people of Europe are anxious to transfer themselves here because man is here a commodity of more value than in Europe, and can obtain more food, fuel and clothing, and better shelter, in return for the same quantity of labour, than he can at home; and the more widely extended the knowledge that such is the fact, the greater is the anxiety to reach our shores. Had

the demand for labour continued to increase as it did from 1844 to 1847, the immigration of the present year would probably far exceed even half-a-million; whereas, there is every reason to believe that there will be a great diminution.

CHAPTER NINTH.

HOW PROTECTION AFFECTS THE MEANS OF TRANSPORTATION—INTERNAL AND EXTERNAL.

THE more widely men are separated, the greater is the difficulty attendant on the making of roads, and the greater is the quantity of labour lost to the farmer in performing the work of transportation, and the poorer he remains. The more men are enabled to combine their exertions, the greater is the facility of obtaining roads; the less the labour lost in transportation, the more can be given to the work of production, and the richer will the farmer grow.

During the years from 1835 to 1840, the tendency was to separation, and there was great need of roads. The widely scattered settlers of Illinois, Indiana, Michigan and Mississippi could not make them of themselves, and none would trust them individually with the means necessary for their construction. To remove this difficulty, they united in borrowing the food and clothing and the iron required for the purpose, pledging the faith of the State for payment of the cost, and the result was universal ruin. Men were scattering themselves, and labour was becoming less productive; the consequence of which was, that immigration ceased to increase; and *it was precisely when the growth of population from that source was arrested*, that we were extending the area of settlement, and diminishing the power of combining exertion for the purpose of increasing the return to labour.

We are now doing precisely the same thing. Men are scattering themselves widely, and there is a great demand for roads. The papers from day to day inform us of the new ones that are being made in the West with iron that is obtained in exchange for certificates of debt, bearing interest, that must be paid. The men who should be making iron are seeking the West, and borrowing the iron they should be making, and, if the system be long continued, the result must be the same that was witnessed in 1842-3.

It is to this unnatural expansion of a small population over large surfaces that is due the agitation of the question of improvement by the general government, one of the most dangerous now remaining to be settled. If the settlement and cultivation of new lands, and the formation of new States, proceeded naturally, the population would become sufficiently rich to be enabled to make their own roads and improve their own harbours; but as that cannot be the case under the existing system, they look to the government for aid. At this moment, it is proposed that a vast amount of land should be given, or sold at a very low price, to aid in the making of a road to California, a work that, if prosecuted with vigour, would be finished half a century before it would pay interest on its cost, because it would tend only to promote the further dispersion of population, and the further diminution in the productiveness of labour. We need concentration to render labour more productive, and to promote immigration; and if that be obtained, the natural and profitable settlement of the country beyond the Mississippi will go on so rapidly as to insure a connection with the Pacific, with advantage to all, in a very reasonable time. It is doubtful if there is a single instance on record of a road having been made with a view to attract population, or one that has been altogether dependent on *through* travel and trade, as this must for a long time be, that has not proved a failure. To make roads productive, they must pass through countries where men consume on the land a good portion of the products of the land, and grow rich, and not through

those in which, because of the absence of consuming population, every thing that is raised on the land is sent from the land, and its owners remain poor. If this road be now made, there will be great loss somewhere, and fall where it may, it will be a loss to the community.

The reason why such roads are unprofitable is, that the transportation upon them is almost entirely limited to bulky articles that must be carried at low freights. The most valuable of all commodities is man, and upon such roads the travel is small, for the people are poor, and must remain at home. Their products pay little to the road, yet the little that is left purchases but little of silk, or cloth, or other of the articles of merchandise upon which high tolls can be charged. Where, on the contrary, there is a large consuming population on the line, the way-travel is great, and the commodities that pass to market pay good freights, while the balance pays for much merchandise to be returned.

Applying these views to the means of intercourse with foreign nations, we may now, I think, see why it is that shipping grows with protection.

The merchandise we send to Europe is bulky, and the returns are compact, a consequence of which is that the outward cargo has generally had to bear almost all the charges of the voyage.

From 1830 to 1834, the reward of labour was, however, such as induced a great increase of immigration, and thus was secured a valuable return cargo, the receipts from which tended largely to diminish the charges on outward freights, and thus the planter and farmer were enabled to consume more largely of the merchandise of Europe, which pays high freights, and more of tea and coffee, while the demand for the raw materials used in manufactures, also enabled ships to bring them as part of their return cargoes, facilitating the transmission of our produce and merchandise to other parts of the world.

From 1835 to 1844, immigration was almost stationary. So was shipping. From 1845 to the present time immigration has grown rapidly. So has shipping. We now import 300,000 persons, and the usual allowance being two persons to five tons, it follows that shipping to the extent of 250,000 tons, making three trips per annum, is so employed. Freights to Europe are low, because the return cargo is large and valuable. Ships of the first class are now built expressly for the importation of men, and so will they continue to be, if the number of passengers shall continue to increase. With a diminution of it, the building of ships will diminish, and freights to Europe will rise, because a valuable return cargo cannot then be calculated upon. The rise of freights will, as a matter of course, diminish the number of articles that will bear exportation, and the quantity of merchandise that can be imported from Europe, while the diminution in the number of mouths requiring tea, coffee, and other similar commodities, will tend still further to diminish the tendency towards the building of ships.

Were we now importing a million of people, the shipping required for a purpose alone would be 830,000 tons, and freights to Europe would be almost nominal, for great numbers would go altogether in ballast. Whatever tends to increase the bulk of the commodities imported tends equally to diminish the cost of transportation, and to increase the export of the products of the farmer and planter. If we imported raw silk, we should import Frenchmen to manufacture it, and coffee for them to drink, and the ships that imported the silk, the men, and the coffee, would cheaply transport cotton or cotton cloth. If we import gutta percha, we obtain it from one who desires to buy cloth, and to whom cloth can then be cheaply sent. If we import gutta percha goods, we obtain them from men who have cloth to sell, and to whom cotton cannot be cheaply sent. If we desire, then, to increase

our commerce and our navigation, the object is to be accomplished by the adoption of measures that will bring the loom to take its place by the side of the plough. The harmony of the agricultural, manufacturing, and shipping interests would here appear to be complete.

With such an importation of men, there would be an annual addition of 1,000,000 with whom we would have *perfect* freedom of trade, uninterfered with by custom-house officers, sailors, or ships. At the end of ten years, there would be thus made an addition of twelve or thirteen millions of persons, who would consume twice as much cotton as is now consumed by the whole people of Great Britain and Ireland. The harmony between the views of the free-traders and those of the protectionists would thus appear to be almost perfect. The more the subject is examined, the more obvious does it become that the *only* road to perfect freedom of trade lies through perfect protection.

PLANTING.

A TABLE showing the Number of Plants required for One Acre of Land, from one foot to twenty-one feet distance from Plant to Plant.

DISTANCE.		NUMBER.	DISTANCE.		NUMBER.	DISTANCE.		NUMBER.
Feet.	Inches.		Feet.	Inches.		Feet.	Inches.	
1	0	43,560	6	0	1,210	12	0	302
1	6	19,360	6	6	1,031	13	0	258
2	0	10,890	7	0	889	14	0	223
2	6	6,969	7	6	775	15	0	194
3	0	4,840	8	0	680	16	0	171
3	6	3,556	8	6	602	17	0	151
4	0	2,722	9	0	538	18	0	135
4	6	2,151	9	6	482	19	0	121
5	0	1,742	10	0	436	20	0	109
5	6	1,440	11	0	361	21	0	99

A TABLE FOR MANURING LAND.

EXPLANATION.—The following Table is intended as a guide in ascertaining the distance and size of the heaps proper for expending a given number of loads per acre, or *vice versa*. In the left-hand columns is placed the distance of the rows and of the heaps in each row, and at the top of the columns will be noticed the number of heaps intended to be made of each load; the point where the two meet gives the number of loads per acre which will be required for that purpose.

Example 1.—Required the number of loads necessary to manure an acre of ground, dividing

each load into 6 heaps, and placing them at distance of $4\frac{1}{2}$ yards from each other? The answer by the Table is 39 $\frac{1}{2}$.

Example 2.—A farmer has a field containing $5\frac{1}{2}$ acres, over which he wishes to spread a mixen containing 82 loads of dung. Now 82 divided by $5\frac{1}{2}$ gives 15 loads per acre; and by referring to the Table it will be seen that the desired object may be accomplished by making 4 heaps of a load, and placing them 9 yards apart; or by 9 heaps at 6 yards, as may be thought most advisable.

DISTANCE OF THE HEAPS.	NUMBER OF HEAPS IN A LOAD.									
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
3 yards	538	269	179	134	108	89 $\frac{1}{2}$	77	67	60 $\frac{1}{2}$	54
3 $\frac{1}{2}$ "	395	198	132	99	79	66	56 $\frac{1}{2}$	49 $\frac{1}{2}$	44 $\frac{1}{2}$	40
4 "	303	151	101	75 $\frac{1}{2}$	60 $\frac{1}{2}$	50 $\frac{1}{2}$	43 $\frac{1}{2}$	37 $\frac{1}{2}$	33 $\frac{1}{2}$	30 $\frac{1}{2}$
4 $\frac{1}{2}$ "	239	120	79 $\frac{1}{2}$	60	47 $\frac{1}{2}$	39 $\frac{1}{2}$	34	30	26 $\frac{1}{2}$	24
5 "	194	97	64 $\frac{1}{2}$	48 $\frac{1}{2}$	38 $\frac{1}{2}$	32	27 $\frac{1}{2}$	24 $\frac{1}{2}$	21 $\frac{1}{2}$	19 $\frac{1}{2}$
5 $\frac{1}{2}$ "	160	80	53 $\frac{1}{2}$	40	32	26 $\frac{1}{2}$	22 $\frac{1}{2}$	20	17 $\frac{1}{2}$	16
6 "	134	67	44 $\frac{1}{2}$	33 $\frac{1}{2}$	27	22 $\frac{1}{2}$	19 $\frac{1}{2}$	16 $\frac{1}{2}$	15	13 $\frac{1}{2}$
6 $\frac{1}{2}$ "	115	57 $\frac{1}{2}$	38 $\frac{1}{2}$	28 $\frac{1}{2}$	23	19	16 $\frac{1}{2}$	14 $\frac{1}{2}$	12 $\frac{1}{2}$	11 $\frac{1}{2}$
7 "	99	49 $\frac{1}{2}$	33	24 $\frac{1}{2}$	19 $\frac{1}{2}$	16 $\frac{1}{2}$	14	12 $\frac{1}{2}$	11	10
7 $\frac{1}{2}$ "	86	43	28 $\frac{1}{2}$	21 $\frac{1}{2}$	17 $\frac{1}{2}$	14 $\frac{1}{2}$	12 $\frac{1}{2}$	10 $\frac{1}{2}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$
8 "	75 $\frac{1}{2}$	37 $\frac{1}{2}$	25 $\frac{1}{2}$	19	15 $\frac{1}{2}$	12 $\frac{1}{2}$	10 $\frac{1}{2}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$	7 $\frac{1}{2}$
8 $\frac{1}{2}$ "	67	33 $\frac{1}{2}$	22 $\frac{1}{2}$	16 $\frac{1}{2}$	13 $\frac{1}{2}$	11 $\frac{1}{2}$	9	8 $\frac{1}{2}$	7 $\frac{1}{2}$	6 $\frac{1}{2}$
9 "	60	30	20	15	12	10	8	7 $\frac{1}{2}$	6 $\frac{1}{2}$	6
9 $\frac{1}{2}$ "	53 $\frac{1}{2}$	26 $\frac{1}{2}$	18	13 $\frac{1}{2}$	10 $\frac{1}{2}$	9	7 $\frac{1}{2}$	6 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$
10 "	48 $\frac{1}{2}$	24 $\frac{1}{2}$	16 $\frac{1}{2}$	12	9 $\frac{1}{2}$	8	7	6	5 $\frac{1}{2}$	4 $\frac{1}{2}$

THOROUGH-BRED HUNTERS.

LOOKING at the pace of hounds, and the manner of riding after them, which have so materially changed within the last half century, it is insisted upon by some that the hunter of the present day ought to be of full blood. Reasoning from analogy, indeed, between the powers and capabilities of one and another, we are decidedly in favour of that breed which has the greatest share of strength within the smallest compass ; and such is decidedly the character of the thorough-bred horse. Independently of this, the thorough-bred horse, when perfect, and with substance, is peculiarly fitted for what a hunter is called upon to perform ; and those persons who assert to the contrary, can only do so in ignorance of the nature of his constituent parts. He has more depth and declivity in the shoulders than the lower bred horse has, and is consequently clearer in his wind. By these means, he can better extend and elevate his fore-feet in going over rough ground, and at his leaps ; and, by the curve or circular figure he makes with his hinder-legs, he stands more secure on all kinds of ground, and, above all things, he bears being pressed better than any other description of horse ; for, although blown, he soon recovers his wind. Having said this, it may scarcely be necessary to add, that several of our first-rate sportsmen of the present day will not ride any thing that is not of full blood ; and such description of horse, when perfect in his work, as well as in his form, commands the highest price.

Nevertheless, the *necessity* for the thorough-bred horse in the field is belied, by the experience of all unprejudiced sportsmen ; and even in Leicestershire, where the best studs are to be found, not a twentieth part of the hunters are of that description. But this perhaps arises from three causes. First, there is a difficulty in procuring full-bred horses to carry even moderate weights, and speed is but a second attribute to a hunter. He must have sundry other qualifications ; and the most prevailing objections to the thorough-bred horse are generally these. He is apt to be deficient in substance to carry high weights over rough and deep countries, without trespassing too much on the virtue of his high descent. Secondly, he is inclined, and especially if he have been trained, to be shy of facing rough and thorny fences, by reason of the delicate nature of his skin, rendered so by repeated sweats in clothes, when in training. It often happens, indeed, that even the cheering influence of hounds, which has so much effect on other horses, will not induce him to take them. In fact, which may appear extraordinary, he does not appear to have in the field the courage of the half-bred horse. Lastly, his feet are apt to be small, in which case he sinks deeper in soft ground than does the lower bred horse, whose feet are larger and wider, and thus suffers more than the latter does in crossing a deep country. As for his powers of endurance under equal sufferings, they doubtless would exceed those of the cock-tail ; and, being by his nature what is termed a "better doer" in the stable, he is sooner at his work again than the other. Indeed, there is scarcely a limit to the work of full-bred hunters of good frame, constitution, and temper.

A sportsman, partial to thorough-bred hunters, should either breed them, or purchase them, not exceeding two years old. If he breeds them, he should select large and bony mares, putting them to horses who have hunting action, such as Tramp had, and several more we could name ; and, if he buy them, it will be his fault if he do not buy those of the right stamp. From their never having been trained, but ridden over rough ground in

their colthood, they would have freer and higher action, and, when castrated at a proper age, would very rarely fail making first-rate hunters. But it may be asked, why subject them to the enervating operation of castration, which, as Percival says, stamps their form and character with the seal of imbecility and pusillanimousness? Our answer here is, that we would not do it, if experience did not show that by far the greater number of entire horses, used as hunters, are either dangerous in a crowd, and when pressed upon in gateways; or given to refuse their fences, when they feel themselves somewhat distressed; and, if once well tired, are not to be depended upon afterwards. When free from these defects, they are doubtless superior to either geldings or mares.

PURCHASE OF A HUNTER.

Although it may not be necessary that a person should be perfectly acquainted with the mechanical structure of the horse's frame, according to the laws of nature, to render him a good judge of a hunter, yet, fortunately for such as have them to sell, vast numbers of persons purchase hunters from very slight experience of them, regardless of the proverb of, "he hath a good judgment who doth not rely on his own." There is also another proverb, prevalent, we believe, in Spain, which well applies here:—"He that would buy a mule without a fault must not buy one at all;" and, although faultless hunters may be as rare as faultless riders of them, we will offer a few hints to a person in the act of purchasing one, addressing him in the colloquial style.

First, bear in mind the country you are about to hunt in, whether flat, hilly, firm, soft, open, or enclosed, and refer to the remarks we have made on the sort of horse we have adapted to each; only be assured, that, in an open country, especially if a hilly one, nothing has a chance with a thoroughbred horse, in good form, and not over-weighted. Secondly, consider well your weight, and be sure to have at least a stone to spare. A light man on a light horse throws away all the advantage of being light, and can go no faster, or leap larger fences, than a heavy man on a strong horse, *for strength will be served*. Until you try him, it is hard to say what horse will make a hunter, but the following indices may induce you to try him:—If he appear well-bred, with a loose, bright skin, which may be called his complexion; observe that his hair does not stand hollow from the skin, particularly about the poll of his neck. If you find him standing over a good deal of ground, it is a sure sign that he has got length where it ought to be; not in the back, but from the obliquity of his shoulders, and the arm being set on at the extreme point of his shoulder, which so much contributes to the act of extension of the fore-parts in galloping, leaping, and clearing grips. Next examine minutely his thighs and hocks, being especially careful to observe the position of the point of the hock-bone. Above all things, avoid a short, and also an over-topped horse. The former will never carry you to your satisfaction, however good he may be in his nature; and the latter, from being too heavy for his legs, will seldom last many years. As for the minor points, common observation alone is wanting. Have his head placed in such a situation for inspection, as will enable you to satisfy yourself that he has perfectly organized eyes, free from incipient cataract, sometimes rather difficult to be detected; and as for his age, there are but two ways of satisfying yourself on that point. By his teeth till about eight years old; afterwards by the state of his legs, which are, in fact, the best test of his value, the best proof of what he has done, and the sure source of speculation as to what he may hereafter be expected to do. Observe, also, his

joints, that no material injury has been done to them by blows, &c., and that they are strong.

But the purchaser of a hunter must not trust to his eye. Neither must he be satisfied with him, how well soever he may gallop with him upon *sound* land. It is the peculiar excellence of "going well through dirt" that renders a horse valuable for all our best hunting countries; and no man can assure himself that a horse has this peculiar excellence, until he puts him to the test. The best method of doing it is this:—The rider should put him along at a good pace, with a slack rein, upon sound ground, letting him find himself all at once upon that which is soft and holding. If, on quitting the former, he cringes more than might be expected under the weight, and shortens his stroke much, he must not purchase him for a hunter. He may go well over a light, down country, but he will never distinguish himself over a heavy one, as he will be going in distress, when other horses are going comparatively at their ease. Horses possess gradations of excellence in this natural qualification or gift, more than in any other, but in it consists the *summum bonum* in a hunter; inasmuch as, whatever may be his other good qualities, they are all useless, when the acting parts are, from this cause—namely, deep ground—easily over-fatigued. The writer himself has good reason to acknowledge the soundness of this advice in the trial of hunters prior to purchase. He once gave 220 guineas for a horse, from seeing him go well over the Oxfordshire hills, where the ground was sound: when he rode him in the vale of Bicester, in the same county, where the ground was of an opposite nature, he proved to be worth little more than as many shillings. With regard to a horse's wind, a purchaser must not judge hastily of that, in a horse not in strong work. Should he not perceive any thing like whistling in his respiration, when he puts him along at a quick pace, and his chest is capacious and deep, and his head well set on, he is not to reject him, in case he appears blown by a short gallop. Condition and work will rectify that; but many a good hunter has been rejected on this account, by persons not taking into consideration the state of his bodily condition, in a trial of this nature; and the writer can produce an instance that bears on this point. He purchased a horse from a London dealer, and on his arrival in the country, a neighbour wished to have him, and at a pretty high premium, as the term is, for he was very perfect in his form. On having him examined, however, after giving him a gallop, by a veterinary surgeon, he was pronounced thick-winded, and the deal did not take place. He, however, turned out a capital hunter, and became the property of the present Lord Wenloch, then Mr. Beillby Lanley, at a large price.

The price of the hunter varies with the times, and, no doubt, is as much regulated by the price of wheat as the quartern loaf is. During the war prices, the sum of a thousand guineas was occasionally given, and that of five hundred guineas frequently.* Half the last-mentioned sum now commands a first-rate hunter. But first-rate horses, in all ages of the world, have ever produced extravagant prices. It is recorded of Alexander the Great, that he gave four Roman talents for Bucephalus, which approaches near to the Melton Mowbray prices, and those, we may safely conclude, stand at the head of the list.

* \$2500!



THE HACKNEY.

UNDER this term are comprised the following:—the Cover Hack, the Park Hack, the Lady's Horse, the Roadster, the Cob, the Galloway, and the Pony.

The difficulty of procuring really good hacks is admitted by all persons who have kept them for the various purposes of either business or pleasure,

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and for the following obvious reason, — that very few people try to breed hackneys, therefore, although we require them to be nearly perfect in shape and action, (and perfect they should be to be “really good hacks,”) they may be said to be failures in the breeding stud after all.

THE LADY'S HORSE.

The lady's horse is, after all, the most difficult to obtain, because he ought to approach very near to perfection. His paces, mouth, and temper, should each be proportioned to the power and capability of his rider; and he should be proof against alarm from either noises or sights which otherwise might cause him to run away. This description of horse should likewise be well bred, as in that case his action will be easier, and his appearance and carriage more in character with the generally elegant appearance of his rider. His pace should be the canter; the trot causes an ungraceful movement in the person of a woman, to enable her to rise to it; and if she do not rise to it, she is much shaken in her seat. Neither is the form of the side-saddle fitted for the trot; and the canter of a well-bitted horse is more safe, because his haunches are more under him in that pace than they can be in the trot. A good bold walk, however, with the head in proper place, is essential to a horse that has to carry a woman; and his action should be very true, that is, he should not “dish,” or throw his legs outward, as the term is, in any of his paces, or he will cover the lower garments of his rider with mud when the roads are wet and dirty. To provide against the latter inconvenience, however, all horses intended for this purpose, should not be much under fifteen hands and a half in height, which size corresponds with the lengthened drapery of a lady's riding costume. As a preventive against accidents, ladies' horses, however well broken and bitted, should not be too highly fed; and, if at all above themselves, should be ridden by a careful servant, with good use of his hands, before ladies mount them. It is, however, an acknowledged fact, that horses go more quietly under women than they do under men, which is accounted for by the lightness of their hand, and the backward position of the body, in the saddle. We have, in fact, known several instances of horses being very hard pullers with men, standing up in their stirrups, and, consequently, inclining their bodies forward, but going perfectly temperate and at their ease under women.

FORM—HEIGHT—ACTION.

The power and parts conducive to action in the roadster, or hackney, are derived much from the same shape and make as we have shown to be best fitted for the hunter; but it is desirable that he should be more up in his forehand than the hunter is required to be, as such form gives confidence to the rider. *The most dangerous* form he can exhibit, if we may be allowed such a term is, with his fore-legs standing too much behind the points of his shoulders, *and those points loaded*. Even with the best formed hinder-legs, the centre of gravity, being thrown so far forward beyond the pillars of support, is, in this case, with great difficulty preserved on the horse making a stumble; but with straight hinder-legs, a horse so formed in his fore-quarters is only fit for harness, where he can recover himself by the assistance of his collar, having no weight on his back. Provided a hackney do not cut his legs, by striking one against the other, which is oftener caused by imperfection in the upper than the lower extremity of the legs, he is not to be rejected because he may turn out his toes a little, some of the very best, fastest, and safest road-horses being so formed. Cutting the hinder-legs is a worse failing than cutting the fore ones, as it is a certain sign of

weakness; and although we may be told that shoeing will prevent it, we bring to our recollection the old adage, that "a goose always goes like a goose." What is called the "speedy cut" with the fore-legs, arises from excess of action, and is a great objection, by reason of the wound given to the leg, which is struck just under the knee. Many good hunters, especially when ridden in hilly countries, such as parts of Surrey, where they traverse hills on loose and stony ground, are subject to this failing, which is remedied by a boot; and, after all, the danger attributed to speedy cut, in throwing horses down, is much over-rated.

Six years back, the writer saw a horse go remarkably well with Mr. Ramsay's hounds, in Scotland; but Scotch sportsmen would not purchase him, because he was given to "speedy cut." The writer recommended him to one of the hardest and best riders of the day—Sir David Baird—then hunting in Leicestershire, who purchased him, and was carried brilliantly by him for two seasons, when, unfortunately, he was deprived of him, by an accident.

The height of a road hackney must be regulated by the size of the person to ride him; but, generally speaking, from fourteen hands to fourteen hands and a half is the proper height. His strength must also be thus calculated, for a light man does not ride pleasantly on a horse equal to double his weight. But a road hackney should have strength of shoulder, with a round barrel, but not a large carcass, which only wears out his legs. His constitution and feeding can only be proved upon trial; but there are certain indices, such as deep ribs, hardy colour, brown muscle, &c., which very rarely deceive us. As to the necessity of well-placed hinder-legs, it is most clearly shown by the answer given to the following question:—If a horse make a serious blunder forward, and the centre of gravity of his body fall beyond the pillars of support, and is for a moment lost, what restores the equilibrium? Is it merely the chuck under the chin to an animal of his bulk and weight, and that "chuck" given perhaps by the weak, powerless wrist of a feeble old man, or delicate young lady? No: the main effect of the bit, or curb, in this case is, first, warning the horse of his danger; and, next, by the momentary raising of his head, he is better able to bring a hinder-leg *instantly* to his assistance, by advancing it under his body, and thus restoring the equilibrium.* In the walk, in fact, the horse actually begins to move by advancing the hinder-leg under the body, before the fore-leg quits the ground; and if he did not do so, there would be no equal support for the body, during the suspension of the fore-leg in the air; nor could the body be moved forwards, until the hinder-leg had, by quitting its station, taken a new point of support. Seeing, then, that in the walk, as in all other paces, the centre of gravity in the horse is maintained, as well as the body propelled, by the action of the hinder-legs, the greatest attention should be paid to the position and action of them in the hackney, as the best safeguard against his falling. We should observe, then, when he is exhibited to our view, that, in his walk, the hinder-foot oversteps the fore-foot, at least a shoe's length, which a horse with straight, ill-formed hinder-legs cannot do; and if such action be accompanied by generally good hind-quarters, it is a great indication of safety, so far as one-half of the body of the horse is concerned. But as the false step is made, not with the hinder, but the fore-leg, the chief safeguard against falling is to be found elsewhere, namely, first, in the length of the shoulder, which throws the centre of gravity further back than a short one; and, secondly, proceeding also from the free use of the shoulder, in the act of setting the fore-foot down on the

* Doubtful.—Ed. P. L. & A.

ground. It is a general but very mistaken notion, that the safety of a roadster depends upon his lifting his fore-feet high from the ground, when he is said to "go well above his ground;" whereas it all depends on the manner in which he places them down upon it. Not only are the highest goers often the most unsafe to ride, for, when they do fall, they fall with a violence proportioned to the height of their action;* but, although we do not advocate such extremes, there are thousands of instances of horses going *very near* to the ground, and never making a trip. It is, however, a well established fact, that if the form of a horse's shoulder, and the consequent position of the fore-leg, enable him to put his foot to the ground *flat*, with the heel well down, his lifting up his foot high is not at all necessary; whereas, on the other hand, if, by any improper position of the leg, issuing out of a short, upright, ill-formed shoulder, the toe touches the ground first, and, as it were, digs into it; no matter how high such a horse may lift up his leg in any of his paces, he will always be dangerous to ride. And this will be clearly shown, if we consider the position of the fore-leg. When off the ground, or in action, it is bent in the form of a *C*, and the foot suspended in the air, turning inwards, with a curve towards the body. When in this state, were the foot to come in contact with a stone, or any other substance, it would pass over it without resistance, the limb being at that time in a flaccid state; but when it approaches the ground, the limb being extended, and having the whole weight of the fore-quarters about to be thrown upon it, if it strike against a stone, or any hard substance, then the case is greatly altered, and a stumble is the inevitable consequence. The base now requires to be firm and even, which it can only be by the foot being placed flat upon the ground. Man, in fact, walks very near the ground, but his toe rarely strikes it. If it did so frequently, he would soon become a cripple, putting falling out of the question. His action proceeds from his hips; that of the horse, as regards the fore-legs, from his shoulders; but the principle is the same with each; each is a piece of curiously-wrought mechanism, and according to the correctness of that mechanism is their action true. A wrong notion, however, prevails here, which may lead the purchaser of a hackney astray. It has been asserted by various writers, that, if the shoe of a roadster be found worn at the toe, it is a sure sign of his possessing the dangerous action to which we have alluded. This is false; many horses wear at the toe, solely by the act of picking up the foot, and quite independently of placing it down. That many hackneys, however, fall from their shoes being neglected, and suffered to wear too much at the toes, we are well aware, as well as from their pressing upon the heels and quarters, from the want of being removed in proper time. When a horse is given to wear at the toe, the wearing part should be steeled.

CAUSES OF STUMBLING.

The best method of ascertaining the manner of putting down the foot, on which we have shown the safety of a hackney depends, is, to ride a horse with a slack rein, on a foot-path, on which there are trifling undulations, scarcely perceptible, but sufficient for our purpose. If he walk smoothly over such ground, and do not strike it with his toe, we may be sure he puts his foot properly down, and will not, from that cause, be a tumble-down. But there are various ways in which horses fall on the road; bad shoeing, as we have already said, being one of them, and bad condition another. What is called a false step, very different from a stumble, may occur to any

* Fault of certain horses bred in Virginia.—Ed. P. L. & A.

horse, and is occasioned by his accidentally putting his foot on a loose stone, that rolls away from under it, when, of course, his footing is lost. In this case, his chance of recovering himself is in his shoulders being oblique and lengthy, (for upright shoulders are always short,) and well placed hinder-legs. Thrushes and corns are also the cause of stumbling; as likewise is starting, one of the worst failings a hackney can have. In some horses it is a nervous affection, rather difficult to account for in animals of such strength of frame; and it often arises from imperfectly formed eyes, such as flatness of the cornea, or outward surface of the eye, generally a small one, causing short-sightedness. In the latter case, this fault in a hackney may be guarded against, by employing a veterinary surgeon to inspect him previous to purchase.

The old adage of "No foot, no horse," applies particularly to the road-horse. The hunter can cross a country upon feet that are very far from good; and by the help of bar-shoes, the coach-horse, with no weight on his back, and with the support the harness gives him, gets pretty comfortably over his stage on unsound feet; but the road-horse must have sound feet. Previously to the use of horse-shoes, the value of a solid hoof was so great as to have been made the image by which the prophet Isaiah set forth the strength and excellence of the Babylonish cavalry, "whose hoofs," says he, "shall be counted as flints." Both Homer and Virgil mention it as an indispensable requisite in a good horse, the latter making it to resound as it strikes the ground,

"Et solido graviter sonat ungula cornu."

We are not going here to enter on a long discussion upon the foot, but only to observe, that the wide hoof and expanded heel of the hunter is not so essential to the road-horse as many persons suppose. Indeed, the hoof that has been found to stand *severe* road-work best, is one rather high at the heel, and not very wide, provided the pastern above do not approach too near the perpendicular; forming what is called "an upright pastern," which, by the jar the foot receives from it, when it comes to the ground, is nearly certain to produce disease. The strong foot, however, of which we are speaking, is one that requires care, by being frequently drawn out with the knife, to prevent its becoming too strong; and by giving moderate pressure to the frogs, to prevent the heels getting nearer together than we find them, and they already approximate to contraction in a foot of this description. The just form of the hoof in front, upon which mainly depends its form underneath, is said by Clarke to be at an elevation from the ground of thirty-three degrees,* and we are inclined to think, that a much greater elevation than this would approach too near the perpendicular, for any kind of foot. As the inner heel or quarter has more weight thrown upon it than the outer, it is the principal seat of corns and sandcracks, for which reason great care should be taken that an even bearing to the whole of the crust be given by the smith to the foot of the hackney, previously to his setting on the shoe, the inner heel being given to wear away more than the outer on that account.

* White says forty-five.

EXPERIMENTS WITH MANURES.

BY ROBERT MONTEITH, ESQ. OF CARSTAIRS.

1. OAT CROP, 1843.—Part of a field manured with 267 lbs. of guano, at the cost of 31s. per imperial acre, produced per acre.....59 bushels.

Manured with 10 bushels bone-dust, at the cost of 23s. 4d. per imperial acre, produced per acre.....43 do.

The difference may be stated as follows:

Cost of guano 31s. produce 59 bush. at 2s. 6d. £7 7 6
Cost of bones 23s. 4d. do. 43 do. do. 5 7 6

7s. 8d. £2 0 0

Deduct difference of manure.....0 7 8

Leaving in favor of Guano£1 12 4

2. HAY CROP, 1843.—To part of a field, manured the previous year with farm-yard dung, was given 267 lbs. of guano per imperial acre, at the cost of 31s. and the *extra produce*, per acre, was 22 cwt. of hay, which, at 3s. per cwt. is£3 6 0

Deduct expense of guano 1 11 0

Leaving in favor of guano £1 15 0 per acre.

3. WITH TURNIP, 1843.

No.	Quantity of land tried	Description of manure tried, and quantity per imperial acre.	Cost of Dung pr acre	Cost of other Manures per acre.	Total cost per acre.	Produce per imperial acre stored Nov. 15, 1843
	Acre.		£ s. d.	£ s. d.	£ s. d.	Tons. Cwt.
1	1	Guano 4 cwt.....		2 8 0	2 8 0	11 8
		Yds.				
2	1	Dung 28 Sulphate of Soda, 1 cwt.....	5 12 0	4 0 5	9 16 0	9 8
3	1	" 28 Burned Bones, 6 cwt.....	5 12 0	2 0 7	7 14 0	7 11
4	1	" 28 Bone-dust, 20 bushels.....	5 12 0	2 6 8	7 18 8	7 2
5	1	" 28 ".....	5 12 0		5 12 0	4 19
6	1	" 28 Gypsum, 2½ cwt.....	5 12 0	8 9 6	0 9 6	6 1
7	1	" 28 Guano, 4 cwt.....	5 12 0	2 8 0	8 0 0	7 13
8	1-16	" 28 Beech-ashes, 48 bushels.....	5 12 0	12 0 6	4 0 6	5 12
9	1-16	Gypsum, 6 cwt.....		1 1 0	1 1 0	a failure.
10	1	Bone-dust, 25 bushels.....		4 3 4	4 3 4	9 6
11	1	Do. 12 bushels, and 133 lbs. guano		2 14 3	2 14 3	11 15
12	1	Guano, 356 lbs.....		1 18 2	1 18 2	11 0
13	1	Guano, 267 lbs.....		1 8 7	1 8 7	10 15

November 30, 1843.—The turnip crop on the field in which the above experiments were tried was fully one-third deficient in quantity from crops generally grown on such land in this

part of the country, the soil being heavy and under medium quality. All the turnip crops in this neighborhood are, however, from one-third to one-half deficient this season.

EXPENSE OF KEEPING HORSES.—In a late English Monthly Magazine, there is an elaborate essay on the winter and summer keeping of Farm Horses. Though the whole of it is interesting to read, the articles of food, brought into the comparison, are so different from those in use in our country, that it would not do to give up the space that the whole essay would occupy. But look here at the conclusion to which the writer arrives:

Thus, then, it is seen that the cost of keeping each horse upon a farm of 120 imperial acres of heavy land, all under crop, is about £8 9s. 5d. during the five summer months, and £12 12s. 2½d. for the seven winter months, or in all £21 11s. 7½d. being a saving of £2 2s. 2½d. in favor

of bean straw and boiled mash as compared to hay and hard corn, for the winter; and a saving of £2 8s. 9d. in the case of posting horses for a period of six months; or a clear gain of £18 9s. 8½d. to the farmer on the winter keeping of nine horses, and of £131 12s. 6d. to the postmaster on fifty-four horses during the winter—no small matter in these times, taken in connection with the positively improved condition of both classes of horses, and the regular performance of ordinary work in both cases. Otherwise the comparative saving would be of little avail, were the horses not at the same time found equal, and more than equal, to their ordinary work; for no greater error can be committed by any farmer than to allow his horses to fall off for want of nutritious provender, especially in winter, with the prospect of long days of severe spring labor before them.

CULTURE OF BARLEY.

Dear Sir: The various injuries to which the wheat crop is obnoxious in Maryland has set some of the best farmers there to casting about for a substitute less liable to the ravages of insects and the casualties of the seasons. Some think of having recourse to barley as the most promising alternative, and, being almost destitute of practical experience, have requested me to obtain for them the best information from persons most conversant with its culture in this State, where it seems to constitute an important staple in your system of husbandry. I pray you, therefore, to excuse my asking you (being persuaded that much practice, with your habits of close observation, has made you familiar with the subject) to give me information on all the points upon which you may suppose a farmer would desire to have light, who is altogether in the dark—as, for instance, in respect to the kinds of barley, the time of sowing, and quantity to the acre—the kind of land (and preparation thereof) best adapted to it—whether or not it serves well as a protection to a grass crop, or whether it is not liable to injury, or to much difficulty in the process of curing, when used as a covering to grass. Do you find it nutritious and commendable as food for stock, and for stock of what kind? and how prepared when so used? What is its usual product per acre (and its price) as compared with wheat, corn and oats?

My own ignorance of the subject, and the haste with which I write, may have led me to overlook some points material to a thorough understanding of the culture and economy of barley husbandry; in which case, I beg you to supply what may be needful to a full development, for the benefit of gentlemen who, as I can confidently undertake to say, are not given to hiding their own lights under a bushel, when the communication of anything they know can be useful to their brother farmers. If you could conveniently furnish me with such reply as you may be kindly disposed to make, within the first week of October, you would greatly oblige

Yours, with esteem and respect,

J. S. SKINNER.

To H. S. RANDALL, Esq.

CORTLAND VILLAGE, N. Y., September 26, 1846.

Dear Sir: I employ my first leisure in answering your inquiries on the subject of barley and its cultivation.

1. *Varieties.*—Barley (*hordeum distichum*) is of two general varieties, known as winter and spring barley. The former is not cultivated in this State, that I am aware of. It is said to be easily winter-killed; but on lands which are kept constantly covered with snow until the beginning of warm weather, or on those which are not subject to freezing and thawing in winter and spring, it is better and produces heavier grain than the spring variety. It can be harvested in time for a second crop of spring barley, in favorable situations.

Spring barley is subdivided into the Siberian, skinless, sprat, chevalier, etc.; but the two varieties most commonly known and cultivated are the "six-rowed" and the "two-rowed." The six-rowed has three seeds united at the base, at each joint of the *rachis*, on each side alternately; the two-rowed has but one row of seeds on each side of the *rachis*. It puts forth three flowrets on a side, at each joint, like the preceding, but the outside ones are barren. The "four-rowed" is but a deviation from the six-rowed.*

There is but little difference in the yield of the six and the two-rowed. The former is about a week the earliest, and, for reasons which I am unacquainted with, usually is quoted two or three cents higher per bushel in the New-York market.† Both bear the same price in the country markets; if there is any differ-

* The varieties of barley will be illustrated when we come to that subject in the republication of Stephens's Book of the Farm.

† Some experienced manufacturers say that there is, perhaps, no intrinsic difference in quality, but that the two-rowed requires more time and care to extract thoroughly its qualities.

ence, the two-rowed is preferred, it being the largest and plumpest grain. No difference is perceptible in the varieties as food for stock. The two-rowed is much the most generally cultivated in this region.

2. *Time of Sowing.*—As early in the season as the ground can be got into proper condition, is with this, as with all the other cereal grains, the best time for sowing. The early crops are almost invariably the best. Barley, however, requires that the ground be in a dry, mellow condition at the time of sowing. It will do to sow it late—as late as oats—with no greater depreciation in the crop than follows the late sowing of the latter. It is customary with our farmers to get in their spring wheat first, barley second, and oats third.

3. *Quantity of Seed Sown.*—Full three bushels are required to the acre. Of the two-rowed, the grains being larger, I sow at least three bushels and a peck.

4. *Kind of Land adapted to it.*—Dry loamy or gravelly soils; but it will flourish in any of our loose soils which are sufficiently rich and dry. It fails on stiff clays, and on all wet, cold lands.

5. *Preparation of the Soil.*—It requires about the same preparation, by plowing and harrowing, as spring wheat. It requires land, too, as rich as prime wheat land. On poor and worn-out soils, oats are more profitable. It has one peculiarity which distinguishes it from all the other cereal grains: it will yield well, and the ears will fill, on highly manured lands, on which the others would run to straw, fall down, and entirely fail to fill. Barley, under such circumstances, will fall down, like the other grains, but the ears will fill when it is lying nearly flat on the ground. I always have it, therefore, follow highly manured hoed crops, in my rotation. I frequently apply sixty two-horse loads of manure to the acre for turnips. If I follow them with wheat, it always fails; and it would require no experiment to demonstrate the folly of sowing oats under such circumstances. Barley will generally fall down, but I have raised sixty, and even more, bushels per acre on soils in that condition. This year I had a small patch of it mixed with flax, on excessively manured land adjoining a barn. The growth was extremely rank, and a whirling wind threw it down, and twisted and tangled it in a manner I never before saw equaled, about the time the grain began to set.—While this went on ripening, the roots put out a new set of shoots, which stood up. At harvesting, the first heads were full of fine plump grain, and the barley, though much smaller, was sufficiently advanced to cure, on the second growth.

6. *As a Covering for Grass.*—It is generally preferred, by those who cultivate it, to any other crop, for this purpose. I have never had my grass seeds fail with it.

7. *Liability to Injury.*—It is less liable to injury than any other grain crop with which I am acquainted. Its tendency to fill, when down, has been alluded to. No insect enemies have yet attacked it, so far as I am aware. I have never known it to rust, though oats are very prone to on my lands. It has a remarkable power of resisting drouth. Its greatest enemy is continued rainy, warm weather, at the time of harvesting. It sprouts readily after it is cut, which seriously injures the grain. I have known crops of it injured in this way, though I never had one of my own thus injured, nor do I think it very necessary.

8. *Difficulty in the Process of Curing.*—It cures with as much facility as any other grain, and is cut with as little labor, when taken in season. It should be cut when the kernels are in a doughy state, and while the straw is somewhat greenish, and stands erect. Left until dead-ripe, the straw "crinkles," and is cut with more difficulty, and the grain shells out in handling it. When it stands, it is cut with the cradle, raked and bound, exposed in shocks (where two rows are set up loosely together, without any cap) for a day or two, and then carted in. If the straw is green, it is generally left a day or two in swath, before binding; but care must be taken that it does not cure too much, on account of shelling. If the crop is down or "lodged," it is cut with a scythe, suffered to lay on the ground a day or two, raked into swaths and cocked like hay, or, if already dry enough, carted in. It may be raked with a horse-rake, if not too dry. This is a cheap way of harvesting barley, but it is liable to the objection that the unbound straw takes up an entirely disproportionate amount of barn-room. It is also difficult to stack it unbound, the straw being short and singularly "slippery."

9. *Its Value for Feeding Stock.*—According to the careful experiments of Thaër, the comparative values of wheat, barley and oats, in feeding cattle, are

represented by 47, 32 and 24, the *measure* being the same. It is considered by our farmers, by measure, to be about half way between oats and corn, in its nutritious properties—perhaps rather nearer the corn than would be indicated by such middle point.

I have fed it to all kinds of farm stock, and like it for all, excepting carriage-horses. For these, oats are preferable. But for draught-horses, oxen, cows, young cattle, sheep and swine, it forms an excellent feed. I prefer it to corn for draught-horses, and also for other kinds of stock, excepting swine, where the object is not directly to fatten for slaughter. I prefer it, because I consider it less stimulating and less cloying. For fattening swine, nothing can exceed corn; but barley is beginning to be used quite as generally for that purpose in this region. Very fat hogs eat it better toward the last than they do corn. No difference can be detected in the pork made from the two grains.

10. *Preparation*.—It should be ground for all kinds of stock. Some soak it soft and feed it unground, but it is poor economy. The meal is fed dry to horses and sheep; mixed with water or milk, and fermented until it acquires a sweet taste, to swine; and either dry or cooked, to cattle.

11. *Product per acre and Price compared with other Grains*.—In my answer to Mr. Walker's "Treasury Circular" (in 1845), I submitted the following tables, which I believe to be essentially correct, and which include most of the information you desire under this head:

GRAINS.	Cost per acre.	Average number of bushels per acre.	Average value of stalks or straw.	Total value, estimating grain at average prices for the last five years.	Net profit per acre.
Indian Corn.....	\$15	30	\$5 00	\$20 00	\$5 00
Spring Wheat.....	9	12	1 00	12 40	3 40
Barley.....	9	28	1 25	13 29	4 29
Oats.....	7	38	1 25	10 18	3 18

AVERAGE PRICES OF GRAINS FOR FOURTEEN YEARS.

YEAR.	Wheat.	Ind. Corn.	Barley.	Oats.	Buckwh't	Peas
			Cts.	Cts.	Cts.	Cts.
1832.....	\$1 12	\$0 56	65	35	44	60
1833.....	1 12	56	65	38	44	62
1834.....	1 06	62	60	37	40	62
1835.....	1 25	69	75	38	56	75
1836.....	1 38	87	75	40	50	75
1837.....	2 00	1 00	75	44	62	80
1838.....	1 60	88	70	42	50	75
1839.....	1 50	80	62	38	50	62
1840.....	1 25	62	50	30	38	50
1841.....	1 07	62	50	28	38	50
1842.....	1 06	60	45	25	38	50
1843.....	88	44	40	20	31	40
1844.....	85	44	40	20	30	44
1845*.....	90	50	40	25	31	40

* The prices of 1845 estimated up to the 15th of October.

It will be understood that the average product above stated includes every variety of land and cultivation. My own crops of barley have averaged not less than 38 or 40 bushels per acre for ten years, and I have raised 65 bushels per acre in some cases.

12. *Miscellaneous Remarks*.—Having replied to your questions *seriatim*, I will, in pursuance of your request, make such other suggestions as occur to me, which I think would prove useful to those unacquainted with the nature and culture of barley.

Climate.—Barley is cultivated and comes to perfection in a greater variety of climates than any other grain.

Mixing it with other Crops.—The two-rowed barley is frequently sown mixed with oats, and in some instances with flax. I have tried both. They do very well together, but on the whole I prefer separate sowing.

Effect of Barley on Soils.—Barley is generally considered a less exhausting crop than oats. Such is my impression, but I am not able to adduce any decisive proof.

Barley Straw.—If the barley is cut quite green, and the straw is cured so that a considerable portion of it retains this color, it is eaten by cattle, in cold weather, almost as readily as hay. It is softer than the other straws, and is much more readily eaten by all kinds of stock, where the process of cutting is not resorted to. I usually cut my oat straw for my horses; I feed the barley straw uncut to my cows. For two winters, it has been my custom to give the latter two feeds of barley straw a day, and one lightish one of hay, with a feed of from six to eight quarts of turnips. They will do as well on this as on a full supply of hay, and it is much cheaper. I have also fed barley straw without hay, giving turnips, or a little barley meal. Either way is cheaper than wintering on hay exclusively, and with proper management will do as well.

Barley in the Rotation of Crops.—It is customary among the best farmers in this region, to take but three grain or root crops before seeding down. The first is generally a hoed crop, on good soils, viz., corn, potatoes and turnips. The first crop receives all the manure. Where the manure is not applied very plentifully, wheat is often the second crop, and barley or oats the third, with grass seeds. But it is common, with many (who make large quantities of manure), to manure their turnips, potatoes, and as much of their corn as they can, very bountifully—say from 40 to 60 loads per acre. In this case barley is the second crop, followed by wheat and grass seeds. On ordinary lands I have sometimes sown oats on the inverted sward without manure; followed them with hoed crops, well manured; and then seeded down with barley. This leaves the land in capital condition for good, luxuriant meadows. On some lands, spring wheat would be more profitable than oats as the first crop in this series. But whatever the order of my rotation, barley invariably constitutes one of its crops. A very extensive and successful farmer here takes but two crops, before seeding down, viz., roots or corn highly manured, then barley with grass seeds. He prefers to purchase his oats, and raises barely enough wheat for his own use.

Advantages of Barley over Indian Corn.—On prime corn lands, and where force enough can be obtained to manage it, no crop will yield a better profit than corn; indeed, no one, perhaps, equals it. But it requires the choicest land, great quantities of manure, a great amount of labor, and a favorable climate. On no ordinary farm can all the arable land be kept in a suitable condition for corn; on many farms the requisite amount of manure cannot be had. It is difficult, and would be here impossible to obtain sufficient labor to manage the crop, if it became anything like a general substitute for the other grains. And finally, on many of our hill lands corn is always a precarious crop, even with the best management, by reason of the shortness of time between the spring and autumn frosts.

When any of these considerations prevent the rearing of corn, I regard barley as the best substitute. It has these advantages over the former: it does not absolutely require so rich land as corn, though, as I have said, it will yield a profitable return on the very richest land. Its cultivation requires no more labor than the cultivation of wheat. It will ripen in the shortest season and on the frostiest lands. Its early ripening gives it an advantage over corn under any circumstances, for summer and fall feed to cattle and swine. Where pork is fattened to any considerable extent, this is an important consideration. Pork is made nearly a half cheaper in warm than in cold weather; and to make its production profitable, swine should be at least one-third fattened by the time corn is ripe.

Threshing Barley.—This may be done by machines, by the flail, or by horses. It threshes more easily than wheat or oats. Much is written about "humming," or breaking off the awns or beards from the grain. I thresh out the grain as I would oats, and that is all. It is then fit to be sent to the mill to be ground into meal for stock.

Storing Barley.—I put it into bins holding, say one hundred bushels each, in a granary; and I never have had occasion to move it or shovel it over, and I never have had any receive injury.

You will please excuse me for the desultoriness of these rapid remarks—and, believe me, sir,

JOHN S. SKINNER, Esq.

Your friend and obedient serv't,

HENRY S. RANDALL.

REARING CATTLE.

THE REARING OF CATTLE, WITH A VIEW TO EARLY MATURITY, AS PRACTICED
IN BERWICKSHIRE, ENGLAND.

BY MR. JOHN WILSON, EDINGTON MAINS, BERWICKSHIRE.

THE valley of the Tweed has long been famed for the rearing and fattening of cattle, its rich pastures, warm turnip-soils, and proximity to England, affording peculiar facilities for prosecuting this branch of rural economy. The "Short-Horns" were early introduced into it, and soon became its established breed; and, though still inferior to the Tyneside herds in symmetry, color, and grazing quality, yet nowhere, perhaps, are they brought to market, at two years old, in such perfection of weight and fatness.

The production of beef, at the quickest and cheapest rate, being the object in view, the first requisite is a stock of cows possessing qualities suitable for this purpose. Accordingly, they should be good milkers—able to keep at the rate of two and a half to three calves each—of a kind known to have a tendency to fatten readily, and to come early to maturity, and of a structure likely to produce a vigorous, well-grown steer. In other words, they must be good Short-Horns; only having more regard to their milking properties than is usually done by breeders of bulls. And here it may be well to notice, that it is in general highly inexpedient for the beef-grower; the farmer who depends largely on his regular cast of fat cattle—to attempt breeding his own bull. *It is only a few individuals in any district who have the taste and skill requisite for this difficult department of the business, not to mention the large capital which must necessarily be invested in it, the precariousness of the return, the greater liability to casualties of such high-bred animals, and the additional expense of their housing and maintenance.* On Tweed-side, the breeding of bulls is confined to a very limited number of persons, chiefly Northumbrians, who, by devoting their whole attention to this department, are able, from year to year, to furnish a class of bulls which are steadily improving the general breed of the district. The contrary practice is at this moment compromising the character of this valuable breed of cattle in several districts of Scotland into which they have been more recently introduced. *Made wiser on this point by experience, the farmer of the Border purchases from some breeder of established reputation a good yearling bull, which he uses for two or three seasons, and then replaces by another in like manner.* This bull serves his own cows and those of his kinds, and some of the neighboring villagers', and thus, though his own stud be limited to six or eight cows, he can select from the progeny of his own bull as many calves as he requires to make up his lot, and has them more uniform in color and quality than could otherwise be the case. As the male parent, among sheep and cattle, is known to exert by far the greatest influence in giving character to the progeny, and increasingly so in proportion to the purity of his breeding, it is evidently much for the advantage of the beef-grower to spare no reasonable trouble and expense in

obtaining a bull of thorough purity, and then to select his calves with the most scrupulous attention. From overlooking all this, how often may cattle be seen, on the best of land, too, which can only be fattened at an enormous expense of food and time, and after all, are so coarse in quality as to realize an inferior price per stone. Occasionally a few beasts of the right sort will seen in such lots, which, by going ahead of their fellows, to the extent of £4 or £5 a-piece of actual market value, show what might have been done by greater skill or attention on the part of the owner.

It is very desirable to have all the cows to calve betwixt the 1st February and 1st April. If earlier, they will get almost dry ere the grass comes, and calves later than this will scarcely be fit for sale with the rest of the lot. When a calf is dropped, it is immediately removed from its dam, rubbed dry, with a coarse cloth or wisp of straw, (this being what the cow would do for it with her tongue, if allowed,) and then placed in a crib in the calf-house among dry straw, when it receives a portion of its *own mother's* first milk, which, being of a purgative quality, is just what is needed by the young animal. For a fortnight, new milk is the only food suitable for it, and of this it should receive a liberal allowance thrice a-day; but means should now be used to train it to eat linseed-cake and sliced Swedish turnip; and the readiest way of doing so is to put a bit of cake into its mouth immediately after getting its milk, as it will then suck greedily at anything it can get hold of. By repeating this a few times, and placing a few pieces in its trough, it will usually take to this food freely, and, whenever this is the case, it should have as much as it can eat, that its allowance of milk may be diminished, to meet the necessities of the younger calves which are coming in succession. This is of the greater importance that it is always most desirable to avoid mixing anything with their milk by way of helping the quantity. When a substitute must be resorted to, oatmeal porridge mixed with the new milk is perhaps the best. Sago of late years has been much used for this purpose; but an eminent English veterinary surgeon has recently expressed a very decided opinion that its use impairs the digestive powers of the animal and predisposes to disease. The sour smell invariably found in a calf-house, where porridge or jelly of any kind is mixed with the milk, is proof sufficient that indigestion is the consequence. An egg put into each calf's allowance, and mixed with the milk by stirring with the hand, is a good help, and never does harm; but, with this exception, it is best to give the milk warm and unadulterated, however small the quantity, and, along with this, *dry* farinaceous food, turnips and hay, *ad libitum*. If more liquid is needed, a pail with water may be put within their reach, as this does not produce the bad effects of mixed milk. Indeed,

in this, it is the best to keep as closely as possible to the natural arrangement according to which the calf takes its suck—at first frequently, and then at longer intervals, as it becomes able to eat of the same food as its dam.

The diet of the cows at this season is a matter of some consequence. Swedish turnips yield the richest milk, but it is too scanty, and calves fed on it are liable to inflammatory attacks. Globe turnips should, therefore, form their principal food during the spring months. Care must also be taken that they do not get too low in condition in the autumn and winter, and for this end it is well to put them dry at least three months before calving. Some may think this long; but, but, on a breeding farm, milk is of little value this season. The cows, when dry, are kept at less expense, and, by this period of rest, their constitution is invigorated, greater justice done to the fœtus, now rapidly advancing to maturity, and so much more milk obtained after calving, when it is really valuable.

When the calves are from four to six weeks old, they are removed from their separate cribs to a house where several can be accommodated together, and have room to frisk about. So soon as the feeding-yards are cleared of the fat cattle, the calves are put into the most sheltered one, where they have still more room, and are gradually prepared for being turned to grass; and, when this is done, they are still brought in at night for some time. At six weeks old, the mid-day allowance of milk is discontinued, and at about fourteen weeks they are weaned altogether. When this is done, their allowance of linseed-cake is increased; and, as they have been trained to its use, they readily eat enough to improve in condition at this crisis, instead of having their growth checked, and acquiring the large belly and unthrifty appearance which used to be considered an unavoidable consequence of weaning.* The cake is continued until they have so evidently taken with the grass as to be able to dispense with it. They are not allowed to lie out very late in autumn, but, as the nights begin to lengthen and get chilly, are brought in during the night, and receive a foddering of tares or clover foggage. When put on turnips, the daily allowance of cake, say 1 lb. each) is resumed, and continued steadily through the winter and spring, until they are again turned to grass.—This not merely promotes their growth and feeding, but (so far as the experience of five or six years can determine the point) seems a specific against black-leg, which was often so fatal as altogether to deter many farmers from breeding. It may be well to state here distinctly the particular purpose for which cake is given at the different stages of their growth. At first, the object is to accustom them to a wholesome and nutritious diet, which will supplement the milk obtained from any given number of cows, so as to admit of a greater number of calves being reared, and, at the same time, have greater justice done them than could otherwise be practicable. At weaning-time, again, it is given to help the young animal over the transition from milk to grass alone, without check to growth or loss of condition. During the following winter, however, the special object of its use is to prevent black-leg, as, but for this, turnips *ad libitum* would be sufficient.

When put to grass as year-olds, they deci-

* Corn meal would probably answer with us where the linseed cake is not to be had. [*Ed. Farm. Lib.*]

dedly thrive better on sown grass of the first year than on old pasture, differing in this respect from cattle whose growth is matured. They are laid on turnips again as early in the autumn as these are ready; and it is a good practice to sow a few acres of globes to be ready for this express purpose. It does well to give the turnips upon the grass for ten or fourteen days before putting them finally into the feeding-yards; and then, if they can be kept dry and warm, and receive daily as many good turnips as they can possibly eat (globe till Christmas and Swedish afterward,) they will grow at a rate which will afford their owner daily pleasure in watching their progress, and reach a weight by the 1st of May which, if markets are favorable, will reward him well for all his pains.

The leading features of this system are, *uniform good keeping and progressive improvement*; in other words, to get them fat as soon after birth as possible, and keep them so till they reach maturity. The details given above are a description of the expedients generally adopted by the breeders of this district for securing these objects. [*Jour. of High. & Ag. Soc. of Scot.*]

LIQUORICE.

To JOHN S. SKINNER, Esq.
Editor of the *Plough &c.*

IN the March Number of the *FARMERS' LIBRARY*, you state that there is "room for inquiry and need for information about Liquorice." It belongs to the natural order *Leguminosæ* of Botanists, or that tribe of plants which have blossoms and pods like the common pea. Its botanical name is *Liquoritia officinalis*. It is a deep-rooting perennial, and has long been much cultivated in Spain; and, according to Loudon, since Elizabeth's time has been grown in different parts of England; hence there is little doubt but that it would succeed well in this country.—Loudon says:

"The soil should be a deep sandy loam, trenched by the spade or plow, or with the aid of both, to two and a half or three feet in depth, and manured if necessary. The plants are procured from old plantations, and consist of the side-roots, which have eyes or buds. These may be taken off, either in autumn, when a crop of Liquorice is taken up for use, and laid in earth till spring, or taken from a growing plantation as wanted for planting. The planting season may be either October or February and March. In general the latter is preferred. The plants are dibbled in, in rows three feet apart, and from eighteen inches to two feet in a row, according to the richness of the soil. The after-culture consists in horse-hoeing and deep stirring, in weeding, and in cutting over and carrying away the haulm every autumn, after it is completely withered. As the plants do not rise more than a foot the first season, a crop of onions or beans is sometimes taken in the intervals. The plants must have three summers' growth, at the end of which the roots may be taken up by trenching over the ground. The roots are immediately sold to the brewers' druggists or to common druggists, or preserved, like carrots or potatoes, in sand till wanted for use. They are used in medicine and porter-brewing."

Yours truly, S. B. BUCKLEY.

Yates Co. N. Y.

EXPERIMENTS WITH GUANO AND OTHER MANURES IN STOVER PARK, DEVON.

No. I.—Report of an experiment to test the comparative efficiency of five different kinds of artificial manure in improving pond mud, the experiment being made on an acre of inferior pasture land in Stover Park, in the years 1847, 1848, and 1849. The land on which the experiment was conducted is of uniform quality; the soil being a light sandy loam, a few inches in depth, incumbent on a stratum of white clay. The land underwent thorough draining in 1844, prior to which it would not produce a rent of more than 5s. an acre. No manures were applied to the land in 1848 or 1849. The object sought to be attained by extending the experiment over a period of three years, was to test the *durability* of the different manures.

No.	Manures applied in 1847.	Weight of Hay cut in 1847.	Weight of Hay cut in 1848.	Weight of Hay cut in 1849.	Weight cut per acre in 1847.	Weight cut per acre in 1848.	Weight cut per acre in 1849.	Cost of the Manures.
		lbs.	lbs.	lbs.	Seams of 3 cwt.	Seams of 3 cwt.	Seams of 3 cwt.	£ s. d.
1	Six cubic yards of mud mixed with 6 cwt. of SALT . . .	312	327	613	4 $\frac{3}{4}$	4 $\frac{3}{4}$	9	0 14 0
2	Six cubic yards of mud mixed with 1 $\frac{1}{2}$ hogshead of LIME . . .	353	337	538	5 $\frac{1}{4}$	5	8	0 13 6
3	Six cubic yards of mud mixed with 3 bushels of BONE-DUST	511	419	670	7 $\frac{1}{2}$	6 $\frac{1}{4}$	10	0 14 3
4	Three cubic yards of mud mixed with 3 cubic yards of TAN YARD REFUSE . . .	524	354	558	7 $\frac{3}{4}$	5 $\frac{1}{4}$	8 $\frac{1}{2}$	0 14 0
5	Six cubic yards of mud mixed with 90 lbs. of PERUVIAN GUANO	930	550	725	12 $\frac{3}{4}$	8	10 $\frac{3}{4}$	0 14 0

N. B. The after-grass in 1847 was stocked with sheep, but in 1848 it was left unconsumed.

No. II.—Report of an experiment made with the undermentioned manures on an acre of pasture land in Stover Park, in the year 1849. The manures, when mixed with a small quantity of fine earth, were applied broadcast on March 29th, and during the rainy weather, which prevailed at the time. The land is of a fair average quality, and was formerly used as tillage land, but has been in pasture for many years. The crops were mowed on the 22d of June, and the herbage produced by the different manures was of a superior quality.

No.	Manures applied.	Quantity of Manures applied.	Quantity applied per acre.	Weight of Hay cut.	Weight cut per acre	Cost of Manures.	Cost of the Manures per acre.
		cwt.	cwt.	lbs.	Seams of 3 cwt.	£ s. d.	£ s. d.
1	None	—	—	401	4 $\frac{3}{4}$	—	—
2	Superphosphate of lime . . .	2 $\frac{1}{2}$	9	616	7 $\frac{1}{2}$	0 18 0	3 12 0
3	Nitrate of soda	1	4	706	8 $\frac{1}{2}$	0 18 0	3 12 0
4	Peruvian Guano	1 $\frac{1}{2}$	6	1210	14 $\frac{1}{2}$	0 18 0	3 12 0

E. S. Bearne.

REALE ACCADEMIA D'AGRICOLTURA, OGGETTO.

Nomination à membre Correspondant, avec transmission du relatif Diplôme.



Corino, addi 16 7bre, 1849.

MONSIEUR: J'ai l'honneur de vous annoncer, que cette Académie, dans sa séance du 2 Juillet, passé, sur la proposition faite par son membre Mr. Le Professeur Baruffi, vous a nommé à son membre correspondant.

Ci joint, je vous transmet le Diplôme relatif à votre nomination; et, en vous priant de vouloir bien agréer mes sincères congratulations, j'ai l'honneur de me dire, avec la plus haute considération,

Votre très humble et obéissant serviteur,

PIERRE A. BORSARELLI, Secrétaire.

A Monsieur le Chevr. JOHN S. SKINNER,

Membre Correspondant de l'Académie Royale d'Agriculture de Turin.

REGIA ACADEMIA AGRARIA

TAVRINENSIS.

Quum Societati Agrariae Taurinensi sub auspiciis VICTORII AMEDEI Regis providentissimi feliciter institutae anno MDCCLXXXVIII illud propositum fuerit, ut hujus Subalpinae regionis cultus ad populorum decus et incrementum magis magisque augeretur, nihil profecto utilius, nihil convenientius visum fuit, quam si collatis Virorum genere, doctrina virtuteque praestantium studiis, ea omnia, ratione et experientia ducibus, exquirentur, quibus aptior telluris excolendae modus, et uberrima omnigenorum fructuum copia comparari posset.

Verum temporis lapsu tot tantaque nobilissima ars, humani generis alitrix, tulit incrementa, auxiliarium potissimum disciplinarum auctu, ut majoribus in die elucubrationibus incumbere debuerit Societas nostra, atque cum exteris Academiis et rei Agrariae cultoribus commercium magis magisque alere. Quapropter et majori Sodalium numero ditandam et Academiae titulo condecorandam Regiam Agrariam Societatem Taurinensem anno MDCCCXLIII decrevit munificentissimus Rex CAROLVS ALBERTVS.

Ergo Te, Equitem John S. Skinner, rei agrariae peritissimum ex cuius adiumento Academia nostra plurimum sibi ad optatum finem consequendum praesidii sperat, inter Academicos liberos latis in generali conventu suffragiis cooptatum adscriptumque pronuntiavit, uti litteris hisce proprio sigillo munitis declarat atque testatur.

Datum Taurini, ex aedibus Academiae, die II mensis Julii anno MDCCCXLIX,

MARONE, PRAESES.

P. A. BORSARELLI, A SECRETIS.



The preceding is a literal copy of the *Letter of appointment* and of the *Diploma*, transmitted through the department of the interior. The translation of them, may serve as an "exercise" for the sons of farmers who may be studying at school the tongues in which the first was written, and the second printed.

Can any one tell what is indicated by the article suspended on the limb of the tree above the goat, and which looks so much like a common old fashioned sifter? The diploma bears at its head the impression of what we suppose to be the royal coat of arms, and has attached to it a large official seal with appropriate emblematic devices. This we did not have engraved.

All we can say on this, as on many similar occasions is, that we expect to labour on through life, finding our chief pleasure in promoting the *cause of the plough*; and that our pleasure in doing that, is unspeakably enhanced, by the conviction, that instead of antagonism and discord, there is perfect harmony of interests between it and *all the other great industrial and useful pursuits of our country*, and all in harmony with the great and uniformly benevolent designs of the Creator—who never intended that we should leave unemployed and neglected, the vast elements of comfort, prosperity, and wealth, with which he has blessed our country.

Here we may add that one of our pressing wants is the *want of time* to cultivate, as we would like to do, useful intercourse with men and societies, at home and abroad, labouring in the same or in kindred causes—but if any one wishes to send this work to any particular person or society, engaged in the promotion of the industries to which we are devoted, we shall be glad to supply numbers as called for, without any consideration but the greatest of all, the hope of being useful to our fellow men—in our day and generation.

In one of his familiar letters, to his friend Dabney Carr, which make a good part of that charming work, "Kennedy's Memoirs of W. Wirt," Mr. W. says, "I persuade myself, however, that the pleasure which a man feels at the approbation of the great and good is laudable, and scarcely deserves so degrading a name as vanity." Whether the authority, than which there could be none higher in matters either of taste or morals, be apposite or not, the reader must decide; but, for ourself, we must say that, the editor of "The Plough, the Loom, and the Anvil," would be wanting in the feeling, which his own judgment tells him becomes the occasion, were he not to acknowledge and to register gratefully, in his own columns, the honour conferred on him in having been elected a corresponding member of "THE ROYAL AGRICULTURAL SOCIETY OF TURIN."

THE LEAD TRADE.

We are happy to have it in our power to report considerable improvements in this important branch of the trade of the country. The year opened with a large demand for pig-lead for shipment to the United States; and this demand has steadily increased during the year. This is altogether a novel feature, as the United States, instead of importing, had for many years exported considerable quantities of this metal. These large shipments, combined with a more active demand from continental ports, must have had a considerable influence on the stock in this country; and, for the information of those of our readers who are interested in this article, we subjoin a comparative account of the exports for 1848 and 1849. The actual shipments made in the month of September, 1848, amounted to 686 tons, of the value of £12,127; in the month of September, 1849, to 2687 tons, of the value of £44,469. The shipments for the eight months ending September, 1848, were 4222 tons, of the value of £78,908; for the eight months ending September, 1849, they were 10,824 tons, of the value of £182,109.—*London paper.*

IMPOVERISHED CONDITION OF LANDS IN VIRGINIA—CAUSE OF EXPLAINED.

Winchester, January.

It is the object of this paper to make manifest the fact, that the present impoverished condition of most of the cultivated lands in Virginia, as well as in other States, is to be attributed *solely to erroneous principles in the science of agriculture, and to no other cause whatever*. It is very remarkable, that although we are so perfectly familiar with the substance called earth, soil, or land, we should still remain so ignorant of its true natural composition. One of the very best agricultural writers, Von Thäer,* remarks, "It is not possible to give a satisfactory definition of the substance which chemists call earth." And it is very certain that the analytical labours of these talented men have discovered no one principle in its composition, which has proved of the least benefit to the practical agriculturist.

There is but little land in Virginia which has not sufficient depth for agricultural purposes, but there exists an infinite variety in its consistence all over the State, evidently for the wise purpose of better adapting it to the growth of different plants. For it has not escaped the observation of the practical farmer, that, in soils of equal fertility, the growth and perfection of the plant depend much upon the consistence of the soil. It appears to me that there is, in reality, no such thing as naturally poor land, because, from whatever depth the subsoil may be obtained, when brought to the surface and exposed a sufficient time to heat, light, air, and moisture, which are known to be essential to vegetable life, it will produce a good crop. This fact the farmer knows who, in an impoverished soil, continues to make good crops by ploughing deeper and deeper. To constitute earth, or soil, it is indispensable that there should be a mixture of clay and sand. Pure sand (silex) and pure clay (alumina) are minerals, not earths. Earth in its natural state, wherever obtained, and whatever be its consistence, is possessed of the fertilizing principle. What this principle is, is known only to Omniscience. Most agriculturists understand the natural fertility of the earth, to mean the fertility of the surface earth previous to cultivation, when first cleared of forest trees. The degree of this fertility differs very much in different locations, not only in different sections of country, but upon almost every field of the same farm; and evidently is not attributable to any difference in the consistence of the soil, or any peculiarity in its chemical composition, for it is well known to be caused by a peculiar substance, called mould, vegetable mould, and humus. Humus is of a dark chocolate colour when moist, when dry it is only to be distinguished from earth by its being pulverulent, and by that appearance well known by the term rich earth. It exists in considerable quantities in some locations, although it is not found in others adjacent; but wherever found it always imparts a much greater fertility than the earth naturally contains. It has been defined to be "the residue of animal and vegetable putrefaction." That it possesses the fertilizing qualities of barn-yard manure is manifest, for if collected and applied to exhausted land, it will impart a more permanent fertility than the best manure. But it is evident upon even a slight examination, that it is a very different substance. Besides, experience has taught the farmer, that leaves are the most indestructible of all vegetable substances, and require a much greater quantity of animal matters to cause them to undergo the putrefactive process, than they can possibly receive from the excrement of those animals which range the forests. It is not true that "it is the residue of the decay of vegetable matters mixed with earth," for it is admitted by Von Thäer, "In the open air and without the intervention of moisture, or of any additional heat, the process of fermentation or putrefaction is not perceptible; a species of decomposition does, however, take place, which is similar to slow combustion. This decomposition produces a very different matter to that which is the result of putrefaction, and one which is smaller in quantity, because the greater part of the carbon combines with the oxygen and escapes in the form of carbonic acid." This trifling residue is certainly not humus. It has been defined (by Liebig), "to be woody fibre in a state of decay." Every practical farmer knows this substance to be pernicious to vegetation of almost every kind. When completely decayed, however, it resembles closely in colour and consistence well rotted barn-yard manure; but differs from it in the important particular that it is utterly destitute of fertilizing qualities. I

* We should hesitate before we could decide, that he ought not to be called *the* best. His "Principles of Agriculture," English copy, consists of two vols. 1376 pages, for which we gave \$12 00. We have the American reprint word for word, and letter for letter, in one vol. 552 pages, beautifully stereotyped on fine paper, which we can sell for \$2 50. That and a year's subscription to the Plough, the Loom, and the Anvil, for \$5 00.

will not now recapitulate the facts which induced the belief, that humus is a chemical change in the earth itself, caused by shade, and that the quantity may always be estimated by its density and duration. In Virginia, and I presume it is universally the case, its formation depends very much upon the degree of exposure of the soil to the prevailing winds. In eastern Virginia, and in the valley, there is little or none of it found on the northwestern exposure, and it is precisely the reverse in western Virginia, the eastern exposures being almost invariably destitute of it. These prevalent winds, freighted with "carbonic acid and ammonia," never fail to lessen the fertility of the soil, unless its surface be thickly covered with loose stone. We learn from the official reports of the first governor of Virginia, that those lands in eastern Virginia, which are now so poor and unfruitful, were at that time considered more productive than the lands in Great Britain. And it is a fact well authenticated, that the first settlers in the valley preferred the State lands, which commanded a much better price per acre than the limestone lands in Jefferson county, now esteemed the best lands in the State. These slate, or as they are now called pine hill lands, were not only equally fertile at that time, but their consistence of soil better adapted them to the growth of tobacco, which was the great staple at that day. That pine does not require for its growth a soil of any particular consistence or peculiar chemical composition, as many persons imagine, is manifest, for all soils alike spontaneously vegetate pine, when exhausted by cultivation, and no soil will, when fertilized. There can be no doubt that trees differ, like plants, not only in the quantity of nutriment which they require, but in their ability to impart more fertility to the earth by shade than they consume during their growth. The poorest uncultivated lands in Virginia, and the only soil in the State to which the term naturally poor, in any sense, can properly be applied, are the stiff tenacious white oak lands. That this condition of this soil does not proceed from any natural defect in its consistence, or chemical composition, is manifest from the fact, that the black oak soils may be made to present the same appearance, by thinning the timber so as to permit the access of heat, light, and a free circulation of air. The trees which remain, not only consume the humus previously formed, but in time deprive it of a great portion of its natural fertility. These white soils may be fertilized, and made to assume every appearance of rich land, by merely covering its surface with any substance whatever which will cause a dense and permanent shade. The first settlers in Virginia owned the lands in large tracts, which, by the aid of slave labour, they were enabled to cultivate very extensively, and from which they derived princely revenues. No one entertained a doubt with regard to the economy of slave labour, until the soil became impoverished. In vain the educated and talented farmer sought in the most scientific works on agriculture for the knowledge necessary to prevent the exhaustion of his land; he everywhere met with the axiom "cultivated lands cannot be made to preserve their natural fertility without manure." This he the more readily believed, because the success of the farmer in the non-slaveholding States, as well as the more populous countries of Europe, appeared to confirm its truth. Acting under this false axiom, he bent all his energies to the collection and application of manure, with the result which might have been anticipated, its complete exhaustion. For you can readily believe, that the farmer who finds it utterly impossible to manure, annually, one-tenth of his cultivated land, must eventually exhaust it. If the plan which you, sir, have been advocating with so much zeal and ability were adopted, to wit, by wise and salutary legal enactments to place the Plough, the Loom, and the Anvil in juxtaposition, I do not entertain a doubt that in time, the renovation of the land would be effected. The consequent enhancement of its value would cause its division and subdivision into farms of such size, as to render it quite practicable for the farmer to manure every acre which he might cultivate. But, sir, you must not forget that when you accomplish this, you bid adieu to the gentleman farmer, a calamity to the south, which, in my opinion, would scarcely be compensated in the renovation of the soil.

Yours, respectfully,

R. T. BALDWIN.

Colonel Capron's Wire Fence—so much admired by passengers travelling between Baltimore and Washington, is represented in the last number of the London Farmer's Magazine, engravings and all, copied from the American Farmer—so that it seems, Jonathan can sometimes offer to old John something worthy of notice, even in the way of making iron fences. The next thing will be for us to send to him to manufacture them for us ready to be set up—just as we used to send home for hats and saddles, and as we now send for shirts and tea kettles.

PINE-APPLES AGAIN!

SOME very wise men laughed at the publication, in a late number, about *Pine-Apples!* Better tell us, said they, something new about *turnips and potatoes* and "sich like." Well, all we have seen new about them, lately, is Dr. Hayes' discovery of a means of preventing the *spread of the rot* amongst potatoes, after they have been gathered, by means of *fumigation with sulphur*: and, moreover, we *believe in it*, from the manner and the men by whom it is vouched for. Some too said, on seeing in our last number the article on the *rearing and breaking of sporting dogs*—"What have farmers to do with guns and pointers?" Now, for ourselves, we should rejoice to see every farmer's son trained to bring down the partridge and the canvass back, in their most rapid flight: and let those who object to it, object also to eat of them when laid before them. We perfectly agree with the Reverend Mr. Daniel, that "to excel in those innocent amusements which require our activity, is often one of the best preservatives of health, and no inconsiderable guard against immoral relaxation." But returning to our apples;—it is gratifying to see that not all of our readers have a disrelish for the beauties and luxuries of agriculture, and horticulture; and so it should ever be. The benefit is to society, when men's inquiries and tastes become more expanded and liberal, in proportion to the amplitude of their means. The Lord help us if all had to endure, and to enjoy, as too many of us have, little or nothing but the *monotony of constant labour!* Though as to what a man may have, merely to eat and to drink, that should be among the least considerations with any sensible man, in a country like ours, where every one has enough to eat and to leave—*cleanliness and good cooking*, are all that need be cared for. But who of us is not sometimes reminded of the adage, that "The Lord sends us meat, but the devil sends us cooks!"

By the same mail, happened, strange enough, to come both the following letters, from widely distant and different parts of the country—to wit: Carolina and Western Pennsylvania—they show not only that we *have* pineries in successful bearing, but, moreover, that in our immense country, one-half the people don't know, what the other half is doing! How few were aware of such preparations for, and such success in cultivating *pine-apples in the United States?* How sincerely would we rejoice to be, "at this present," within reach of our friend in the sunny South, and by and by, with him in the forks of the rivers that make the head springs of the vast Ohio! But, alas!—

CULTIVATION OF PINE-APPLES.

In reply to the queries in your last number respecting this fruit, I will state that for several years I have eaten pine-apples of my own raising, which are far superior to those imported. The reason for this superiority consists in the fact that those are shipped in a half ripe condition, while mine are cut when perfectly ripe.

The cultivation of this plant is attended with but little difficulty. On eating the fruit, I plant the crown in the ground, where it soon takes root. The plant must be protected by glass during the severest weather. In two or three years, it sends up its fruit much after the manner of the artichoke; after which, suckers from the same root continue to produce.

The largest I have raised as yet weighed *five pounds*, which is far more than those we receive from the West Indies. One of my neighbours has been equally successful with them, and is enlarging his plantation.

As to the tea plant, respecting which we have heard so much of late; it has bloomed here in the open air for the last ten years, along with other camellias, and is equally hardy. Thus far, this winter, we have had no frost to kill the tenderest plants.

J. S.

Daufuskie Island, S. C., 19th January, 1850.

P—N—, Jan. 25th, 1850.

MY DEAR SIR: In the number for the present month of that most valuable and in-

teresting miscellany, "The Plough, the Loom, and the Anvil," you have, on the subject of "The Cultivation of Pine Apples," made the following inquiry—"Why is it not attempted in America?"

Knowing the great interest you take in whatever relates to the horticulture of the country, in addition to other interests of greater or less degree, I beg (not with a view of "appearing in print," *but the contrary*), en passant to say, I am one who has "attempted" it, and dare say you will learn of others, although I am aware of none.

My original stock were selected from pineries in England, where quite a passion for their cultivation exists, and embraces all their choicest varieties, and my plan of cultivation, without previous concert, is that recommended or adopted by "Mr. Fleming," who has been so successful.

I have under glass upwards of twelve hundred feet, to be exclusively appropriated to the pine-apple, the requisite heat being supplied by hot water pipes.

I wish with this impromptu communication, I could accompany a sample. I must reserve to myself that privilege, but would be infinitely more pleased, if you would intimate to me your willingness to appear in person to be a witness of the *modus operandi*, &c. &c. You would find it hereabouts, as in any, and every part of the United States, that you had many friends to greet you and welcome you amongst us, but, believe me, by none more sincerely and cordially than

Your friend and obedient servant,

W. C.

To J. S. SKINNER, Esq., &c.

A CURIOUS AND USEFUL INVESTIGATION.

WE take pleasure in announcing that P. A. Browne of Philadelphia, is writing, and expects shortly to present to the public, a work upon HAIR, WOOL, and FUR, which bids fairly to add to our stock of knowledge upon these hitherto much neglected subjects. To those who have not turned their attention to examinations with the microscope, it will doubtless be matter of surprise to find how intimately the labours of this gentleman are likely to contribute not only to the cause of science generally, but, through the improvement of our breeds of sheep and the manufacture of their fleece, to the comforts of the citizen generally, and the wealth and prosperity of the nation. Mr. Browne, whose logical mind fits him for exact inquiries, and whose industry is proverbial, has spent months and years in these pursuits; he has provided himself with the best instruments, and by long use has acquired great skill in their application, and he spends many hours every day of his life in either adding to his already large cabinet of piles, or in their manipulation and description. Many persons who have visited him half disposed to smile at his assiduity upon a subject apparently so small as a hair, have retired enraptured with his essays, and convinced that he is doing much good to his country. Mr. Browne's book purports to embrace the whole subject, giving the cream of all that has hitherto been written upon hairs, with his own experience subjoined, confirming what is correct, and pointing out the errors of his predecessors. To these he has added the results of hundreds of experiments of his own, upon points that have never before been noticed in this or any other country. The volume will contain nine chapters, and will be enriched by several hundred diagrams.

The first chapter contains the true description of a pile, pointing out wherein it differs from a feather, and accurately discriminating between hair and wool, which have been hitherto confounded.

The second chapter enters into minute descriptions of the *different parts of a hair*, its stalk, root, vessels, secretions, &c., and shows the difference between a common hair and the whiskers of some of the lower animals. In a note to this chapter are some remarks upon the hairs of lunatics that are exceedingly interesting.

Chapter the third treats of the essential properties of hair, and shows in what part of the integument these properties reside. The ductility, elas-

ticity, and tenacity of pile are here explained, as are also the direction and inclination, and an attempt is made to fix the races of men by the covering of their heads. This chapter which contains much new matter will attract the attention of all those who delight in the study of Natural History. In a note will be found a review of those parts of Mr. Pritchard's Natural History of Man, in which it is contended that we all belong to one species, and that the covering of the negro's head is hair and not wool.

The fourth chapter relates to the *colour* of hair and its changes, whether sudden or gradual, &c.

The fifth chapter is confined to the *growth* of pile, but it gives numerous examples of variations in the shapes and dimensions of hair according to the place where it is found, and the uses it is to subserve. It also furnishes some curious facts in relation to *accidental* hairs.

The sixth chapter is devoted to the *dimensions* of pile,—its *exuberance*, *rapid growth*, *regeneration*, *decadence*, and *endurance*. It also points out some effects of disease, either of the animal upon which it grows, or of the hair itself, &c.

The seventh chapter treats of the electricity,—power to conduct caloric,—specific gravity and incineration of pile, and points out how it is affected by climate and seasons.

The eighth chapter treats of the *uses of hair, wool, and fur*. It is in this and the succeeding chapter, that Mr. Browne has put forth the whole force of his mind. The property of felting, fulling, and shrinking of wool is explained in this chapter in the most satisfactory manner.

The ninth and last chapter is devoted to the *raising and breeding of sheep*, and rules are laid down for effecting these desirable objects; some of which are *entirely new* and of the most *vital importance*. Mr. Browne there shows what he considers a radical error into which the sheep breeder has fallen, which, unless corrected, will forever prevent him from having a *permanent* breed of this useful animal.

Of the nature of Mr. BROWNE's researches, and the practical results to which some of his philosophical investigations lead him, an idea may be formed on a view of what follows. The reader may too, the better appreciate the advantages of a locality which enables us thus, to have recourse to such excellent sources of information, on subjects connected with the leading objects of this journal. For what he will find in this number about *gardening*, in reference to the season at hand, we are indebted to Mr. BUIST; well known as among the most experienced and scientific horticulturists in our country. After all, much occupied and anxious as we have been, to justify the liberal patronage we have received, equal in amount, already, to ten thousand subscriptions to some other agricultural journals, we yet feel that we have not more than begun to be prepared, to do all the service we hope to render, to the useful industries of the country.

We may venture to add for Mr. Browne, whose investigations of the breed of sheep, and the qualities of wool, have been perhaps more extensive than any one in our country, if not abroad; that he looks on Mr. Randall's work on sheep husbandry as *the best in its way he has ever met with*.

Philadelphia, February 6th, 1850.

DEAR SIR: My brief notice of Mr. Cockrill's wool was intended for your *private eye*, presuming that you are familiar with measurements of wool in general. I now proceed to compare it with some few other specimens in my cabinet, as the most effectual way of answering your inquiries for the general reader.

List of specimens employed in the comparison.

No. 1. Wool from the side of an ewe of Prince Lichnowsky's stock breed, at Kuchelna, which is considered the most celebrated flock in Europe; thorough blood for 40 years.

No. 2. From an ewe of the herd of Guettmannsdorf, celebrated for thorough blood and fine large sheep.

No. 3. From a buck of the herd of Pishkowitz, owned by Baron Zedlitz.

No. 4. From a buck of the herd of the Viceroy of Hungary at Altsuth.

The above are from a portion of the wool samples collected by Mr. Charles L. Fleischmann, for the U. S. Patent Office in 1845-46.

No. 5. Full blood Saxony from Saxony.

No. 6. " " " raised in the United States.

No. 7. $\frac{3}{4}$ " " " " "

No. 8. $\frac{1}{2}$ " " " " "

No. 9. $\frac{1}{4}$ " " " " "

These specimens were presented by Messrs. Bullock & Davis, of Philadelphia.

No. 10. Wool from Washington Co., Pennsylvania; presented by Messrs. Houston & Robinson, of Philadelphia.

No. 11. From the farm of Mr. Allen Roberts, of Bedford Co. Virginia; presented by Col. B. B. Long, of Philadelphia.

No. 12. From a ram lamb, nine months old, of the flock of the Duke of Leitchnau, in the possession of the Hon. R. R. Reed, of Washington Co. Pennsylvania.

No. 13. From the dam of No. 12 (being of one year's growth), in possession of Mr. J. Strian.

The two last presented by the Hon. R. R. Reed.

No. 14. From one of five bucks of S. Patterson, Esq., of Co.

No. 15. From one of five ewes of the same gentleman.

These last were sent to me from Washington City, probably by Mr. Reed, no letter accompanying them.

No. 16. From an ewe of Col. H. S. Randall, of Cortland Village, New York, presented by himself.

No. 17. From Mark R. Cockrill, Esq., of Tennessee (eight months growth).

No. 18. From a buck of Mr. John D. Patterson, of Westfield, Chautauque Co., New York, both of the two last presented to J. S. Skinner, Esq.

Comparison of length of staple, beginning with the shortest.

	Inches.	Tenths.		Inches.	Tenths.
No. 3.	1	1	No. 14.	1	5 to 1 and 7.10.
" 13.	1	1	" 11.	1	5 to 2
" 1.	1	2	" 6.	1	6
" 4.	1	3	" 12.	1	6
" 15.	1	3	" 8.	1	9
" 2.	1	4	" 17.	1	9
" 5.	1	5	" 7.	2	
" 10.	1	5	" 9.	2	9
" 16.	1	5	" 18.	3	

Comparison of fineness. Diameters taken with one W. Hirschman's (of Berlin) fine microscopes, with a power of 1200, and a micrometer adjusted which measures the 5000th part of an inch with great accuracy.

No.	Diam.	$\frac{1}{5000}$ of an inch.	No.	Diam.	$\frac{1}{5000}$ of an inch.
No. 5.	"	$\frac{1}{833}$	No. 14.	"	$\frac{1}{1250}$
" 8.	"	$\frac{1}{833}$	" 15.	"	$\frac{1}{1250}$
" 10.	"	$\frac{1}{833}$	" 17.	"	$\frac{1}{1250}$
" 6.	"	$\frac{1}{1041}$	" 18.	"	$\frac{1}{1250}$
" 7.	"	$\frac{1}{1041}$	" 1.	"	$\frac{1}{1562}$
" 12.	"	$\frac{1}{1065}$	" 2.	"	$\frac{1}{1580}$
" 9.	"	$\frac{1}{1250}$	" 3.	"	$\frac{1}{1600}$
" 11.	"	$\frac{1}{1250}$	" 4.	"	$\frac{1}{1600}$
" 13.	"	$\frac{1}{1250}$	" 16.*	"	$\frac{1}{1875}$

Comparison of strength. These were made with an instrument invented by me

* Mr. Youatt in his Essay upon Sheep, says, that it is coarse when the diameter is more than 1.500; fine when it exceeds 1.900, and very fine when it exceeds 1.1200. Mr. Youatt quotes Saxony wool at 1.840, and the Merino of Lord Weston (picklock) at 1.750th of an inch.

called a trichometer, with which the ductility, elasticity,* and tenacity of any fibre can be correctly ascertained.†

No. 5.	Broke with 54 grains.	No. 9.	Broke with 224 grains.
" 6.	" " 74 "	" 13.	" " 105 "
" 7.	" " 164 "	" 17.	" " 89 "
" 8.	" " 144 "		

Comparison by the *number of scales* upon the cortex. To those who have paid no attention to this subject, it may be as well to premise that it is upon these scales that wool depends, mainly, for its felting and fulling properties; and that these properties are increased in proportion to their number, their shape, their roughness, and the looseness with which they are set upon the shaft. Their number is ascertained by counting a given space under the microscope, and therefrom calculating the whole number on the area of an inch.

No. of scales counted upon one running inch.		Diameter of the shaft in parts of an inch.	Whole number of scales upon one inch.
No. 9.	2400	1250	NOTE.—As this is a mere matter of calculation, and I am pressed for time, I have left it to be supplied by your readers.
" 1.	2490	1562	
" 2.	"	1580	
" 3.	"	1600	
" 8.	"	833	
" 4.	2496	1600	
" 5.	"	833	
" 6.	"	1041	
" 7.	"	"	
" 10.	"	833	
" 11.	2498	1250	
" 17.	2500	"	
" 12.	2545	1093	
" 13.	"	1250	
" 16.	"	1875	
" 18.	"	1250	
" 14.	2552	"	
" 15.	"	"	

Comparison by the *spiral curls* on a filament. Although it is upon the *scales* that wool mainly depends for its felting and fulling properties, yet the process is assisted by the spiral curls, wherefore, they also should be enumerated. But I have not time *at present* to make this calculation; moreover, specimens No. 1, 2, 3, and 4, were so much injured by handling, that it was not possible to enumerate these curls with certainty.

Some general remark upon the appearance under the microscope.

No. 1, 2, and 3. Some variations in the diameter of *different* filaments, the whole sample having the remains of yolk and dirt.

No. 4. More regular, but sample dirty.

No. 5. Thickened places upon a filament.

No. 6. Very even and clean, and filaments of equal diameter.

No. 7. Not so equal in thicknesses of the filaments.

No. 8. Same.

No. 9. Still more unequal.

No. 10. Very even and equal.

No. 11. Too *undulating*, but clean and equal.

No. 12. Clean and even.

No. 13. A little less even than No. 12.

No. 14. Clean and even.

No. 15. Same.

No. 16. Same.

No. 17. Not quite so even as the three last.

No. 18. Same as No. 17.

I will conclude with requesting those who will favour me with samples of wool to examine under the microscope, to observe the following directions, viz.:—Have the

* The elasticity of a woolly fibre is the measure of the *softness* of the fleece.

† I did not subject specimens No. 1, 2, 3, and 4, to this trial, because, when they came to my possession, they had been much handled and exposed, and I feared that their strength might have been injured.

fleece drawn out, not cut off—not to wash it,—to send me the name of the owner, with his address,—if the animal is imported, to state where from,—to state the age, sex, and length of time since last sheared,—the part whence the same is taken.*

I am, dear sir, your obedient servant,

P. A. BROWNE.

To J. S. SKINNER,
Editor of "The Plough, the Loom, and the Anvil."

N.B.—When you read the above, please recollect that you limited me in time, and that there has been very little clear weather fit for examination with the microscope.

P. A. B.

THE WOOL TRADE.

Receipts of Wool from the interior, on the New York and Pennsylvania Canals, and at Boston per Western Railroad for three years:—

	1847.	1848.	1849.
N. Y. Canals, lbs. . . .	17,044,000	8,729,407	12,731,402
Pa. " "	4,251,987	2,930,136	5,113,075
Western Railroad . . .	3,823,600	3,598,596	4,701,600
Total	20,149,587	15,264,136	22,606,078
Total imports	8,450,006	11,381,429	17,869,022
Total	28,609,592	26,645,566	40,475,100
Dom. expenditures . .	378,440	781,102	159,925


This very considerable increase in supply has been attended by a constant increase in price, and the year closes, as compared with its commencement, as follows:—

January, 1849	34 a 36	41 a 34	28 a 30	25 a 27
" 1850	42 a 48	38 a 70	36 a 38	34 a 35
Increase	8 a 12	7 a 7	8 a 8	8 a 8

An increase of 50 per cent. in the quantities delivered at tide-water, has been attended with a rising of 25 a 30 per cent. in prices; the market closing with great activity, and advancing rates with very light stocks.

DR. THOMSON'S ADDRESS AT EASTON, MARYLAND.

EXTRACT FROM.

 We have had the pleasure to receive a copy of an "Address delivered before the Agricultural Societies of Talbot County, Maryland, on the occasion of their Annual Exhibition and Ploughing Match, November 2d, 1849. By James W. Thomson, M. D., of Wilmington, Del." Published at the request of the Society. This excellent performance is thus justly and well characterized by the Delaware Journal:—

"It commences with a very graceful and eloquent exordium regarding the charms of rural life and pleasures; then takes a bird's eye view of the progress of agriculture, from the Georgics of Virgil and the Odes of Horace to our own day; sketches, in a graphic and pleasing manner, the history of improvements in farming in Delaware, reviews the agricultural history of the United States in a very interesting and intelligent manner, and terminates with a beautiful peroration to *Woman*, Heaven's last best gift to man. It is a very handsome affair, and should be read by every farmer in the country."

It should certainly be put within the reach of all the farmers who favour this journal with their patronage, did we not find it impossible to publish at

* It would be best to send *picklocks*, always.

length, or even to make extracts from the very many we receive from all parts of the Union. We may take it for granted that it has been, or will be preserved, in that good old repository of such good things, "The AMERICAN FARMER," at Baltimore.

We must, however, at once make room for a single extract, in the sentiments of which our readers need not be advised of our humble and hearty concurrence, except that the doctor, with his "*indirect* protection at least" seems rather to shy the mark on which we would draw the bead at once. Those who go for the *power to maintain* the principles of free trade, must reach it by direct protection, up to the point when we shall be no longer "subject to the policy of British merchants." This is a preliminary clearing just as necessary as it is for the farmer to cut down, grub, ditch, drain, and clear his wild land before he can practice clean and profitable cultivation. We only wish we could make room for the whole address, as we should have done if possible for the admirable discourse pronounced by Senator Pearce, at Baltimore, the week before.

"To make agriculture profitable in the United States, as well as honourable—*protection*, at least indirect protection, is of vital consequence, and this we suppose can best be done by truly and faithfully encouraging those who use the products we raise,—at the highest market price,—we taking from them in turn manufactured goods; such as iron, shoes, hats, and other necessities, at the most reasonable rates at which they can be bought; and this price, the world over, is regulated by the amount of supply and demand, and the ability of consumers to pay for what they want in trade or its equivalent in money. This advantage to agriculture is amply manifested in the thrift of northern and eastern farmers; as with us and amongst all others, where the consumer and producer approximate and mutually sustain and support each other,—and in Maryland you are happily not without some proofs of the truth of this doctrine.

"Looking then upon manufactured goods as made up of so many parts of raw material, whether of wool, cotton, or iron, and so many of flour, beef, and pork, contributed by the farmer—it will readily be perceived why both should be protected from foreign interference, and how perceptibly the interest of the one runs into the other, and claims the consideration and favour of wise legislation and its fostering care. In corroboration of this view we need not be astonished at the declaration of an eminent member of the British Parliament, who recently said: 'Paradoxical as it may appear, I think Great Britain the largest grain exporting country in the world, although it is impossible to calculate accurately what quantity of grain and other farming productions is consumed in preparing fifty millions of exports by which she so greatly benefits. This grain and these farming products are placed in the laboratory of that wonderful machine, man, which gives him the physical power, aided by steam, of converting them into broad cloths, calico, hardware, &c., and in those shapes your wheat and farming find their way to every country in the world.'

"Precisely the same remarks apply to our own country, already recognized as the granary of the world,—with this additional advantage over Great Britain or any other manufacturing people, that we can raise within our own borders not only all the bread-stuffs we consume, without drawing upon the depots of the Baltic and Black Seas,—but have a large surplus left; and as our resources in the staple mineral, vegetable, and animal products, in which we abound, are developed, and given (as they should be), to our own looms and anvils, we too can and will become the greater manufacturer and our ships laden with our valued goods be wafted to all the markets of the habitable globe.

"What, then, fellow-farmers of Maryland, do you and all agricultural America, most stand in need of at this period of the nineteenth century? Is it the acquisition of more States or Territories? More land to cultivate, or larger and higher fed cattle than you now exhibit everywhere?

"No, no, these you already possess, and your children's children will have them in all time to come;—but what we most want amongst farmers is *education*, education of a high and liberal order, to cause us to *read* and *think*,—and love to do so,—to improve ourselves and to be able to instruct others: to avail ourselves of our privileges, yea, *our rights*, which are now withheld mainly through our own ignorance, indifference, and neglect."



DEFIANCE.

Bred by and the property of Henry S. Randall Esq., of Cortland Village, New York.

ON SHEEP HUSBANDRY, AND PARTICULARLY IN MARYLAND.

Not being aware of any resource more fruitful, or more within the reach of farmers south of Delaware, or one which is more universally neglected, than the rearing of sheep for mutton and wool, we shall continue to bring the subject to, we fear the reluctant notice of some of our readers, until we hope we may say of them, as they perhaps say of us now—the man's gone a "wool-gathering."

It is well known that a large proportion of farmers in the region referred to, look to their sheep as a mere incidental concern; convenient enough, say they, to yield yarn for the negroes' stockings, trap-balls for the children, and occasionally an almost superfluous luxury for the table; and the more so as American ladies rarely relish anything sheepish, and no good husband truly enjoys what his better half has little or no taste for. It is not to be denied that many are restrained, however, from increasing their flocks, from the almost certain *ravages of dogs!*—In October last, we made a visit to a gentleman near St. Michaels, Md., who, and his near neighbour, had then very recently lost by worthless dogs, lots of fine fat mutton, well fitted to make a "dish to set before a king," and more recently, extensive loss has been sustained in the adjoining county of Queen Anne's, in the same way. Yet we hear of nothing being yet done at Annapolis, in the way of arresting this vile opprobrium to the husbandry and the legislation of the State.

In Maryland there are 7,000,000 of acres of land, and 257,972 sheep; or about 27 acres to every sheep. In Vermont there are but little over 3 acres to a sheep; and yet in natural climate and pastures, the latter is not to be compared to the former. We lately saw in a steamboat coming from Talbot county, and from West River, in Maryland, large lots of as choice mutton, though perhaps not so *excessively* fat, as ever graced the shambles of

Leaden Hall Market. There is, in fact, something in the salt atmosphere pervading the tide-water counties of the Chesapeake Bay, peculiarly congenial to the health and constitution of sheep. We should doubt if there be in the world, a region in that respect, superior to the range of hilly lands lying all along from Herring Bay down to the mouth of the Patuxent, at least. Some of the sheep, Governor Stephens' for instance; to which we have referred, brought \$8 a head—but say \$6; ought not every farmer who has 4 or 500 acres of land, to pocket at least as many dollars for his sheep? leaving his wool to pay more than the cost of their keep!

We very well know (it takes no witch to find it out), that Maryland is tempted by climate, soil, and cheap transportation to go more largely into the *raising of grain crops*. But might not Maryland double her flocks, and yet not have one-fourth as many to the acre as Vermont, where they feed with choice hay, four and a half to five months in the year?

Mr. Randall, in his unequalled work on sheep husbandry, tells us that "the grazing lands of New York, cut up as they are into small farms (not averaging, in his judgment, more than 130 acres each), are worth from \$15 to \$30 an acre. Prime sheep lands will average about \$20," and yet on these lands, he says, "a gentleman who has been one of the most successful feeders of cattle and sheep in this State (P. N. Rust, Esq., of Syracuse), recently remarked to me, that he had *invariably found that sheep paid better for feeding than cattle.*" We may here add, that in riding over his magnificent cattle grazing estate in Monroe county, Virginia, Mr. OLIVER BURNS, a gentleman whose information and judgment, fully equal his enlarged experience, expressed to us his own persuasion to the same effect; although we believe, he had not like Mr. Rust, actually made the experiment. But suppose Maryland to double her flocks, adding, say, 250,000 at \$2 each, there would be an almost or quite additional income of half a million a year, for investment in artificial manures, in labour, in internal improvements, in schools or in manufactories, the savings-banks in which millions worth of labour that is now wasted might be deposited, as it is in New England. Yes, the very clear saving which might thus be effected by the extension of her flocks alone, would be sufficient to erect woollen mills in every county of the State, for the manufacture of its own wool; while the people employed in them, and connected with them, would help to eat the farmer's milk, and mutton, and corn, and cabbage. Mr. Randall estimates the profits of wool growing in New York, on lands worth \$20 an acre, at 20 per cent. over and above all expenses; and yet he sets down these at $27\frac{3}{4}$ cents per pound, of wool, where the fleeces do not exceed 3 pounds. There are, he says, two or three other considerations highly favourable for the raising of sheep. But our remarks are running to a length that compels us to content ourself for the present with a short extract, invoking the attention of those who are deterred by the fear of dogs (if we must continue to submit forever to that reproach on the character of the State) to his remark, that die when or how it may, the grown sheep "*never dies insolvent!*"

"The risk, by death, by ordinary causes, is nothing. Two per cent. is allowed in the preceding estimates, as the full product of wool and increase is carried out. But, in reality, the sheep never dies 'insolvent.' If the colt or the bullock dies on our hands, after two or three years of trouble and expense with it, the loss is nearly a total one. If the fine-wooled sheep dies at any age, the wool then on it, or what it has already produced, *more than covers all the cost which it has ever made us.*"

"Not only is the winter manure of the sheep superior to that of any other domestic animal, the hog and fowl excepted, but it practically becomes still more so in proportion, in summer, when scattered over the pastures, by reason of the conditions in which

* I speak, of course, of the cost of rearing and feeding.

it is deposited. The soft porous excrements of the cow* or horse, exposed to the exsiccating action of sun and wind, evolve most of their fertilizing properties into the atmosphere, and this effect would increase, in proportion to the warmth of the climate. The excrements of the sheep, on the other hand, are deposited in small, hard, rounded pellets, which fall down between the leaves of the grass, and are thus in a great measure protected from the sun and wind, until they are trodden into and incorporated with the soil.† Then, again, they need no spreading,‡ like the dung of the horse and cow. And finally, instinct, in leading the sheep almost invariably to seek the summits of the elevations, in warm weather, for its night quarters, leads it to deposit much more manure in proportion, where it is most needed, on the drier and more barren hill-tops; and where, being more remote from water-courses, less of its juices are liable to be washed away by rains, into the streams, or on to the lands of others.

"Sheep are also far more efficient than any other animal (if we except the worthless goat) in clearing up new lands, or neglected old ones, of those briars and shrubs which it is often difficult to eradicate without ploughing; and they often abound on lands which cannot be ploughed with profit. And, when ploughed, the shrubs in the fence corners must be left (to the utter shame of all good husbandry), or the fence must be removed—sometimes at a great inconvenience. The sheep delights to browse on the buds, and to strip the bark of most shrubs,§ and they thus soon destroy them. It would be good economy for the farmer to keep his neighbours' sheep, without charge, on all very briery or coppiced unarable lands, if he could not so stock them himself.||

"Finally, it is generally believed by experienced flock-masters—and observation has led me to fully coincide in the opinion—that sheep not only improve the lands they depasture more than any other animal, but that they exert an almost specific influence in improving the character of the vegetation. All wild, poor grasses gradually disappear from their pastures, and are succeeded by the best ones; and the sward becomes remarkably dense and even. This is probably due to the richness and better distribution of their dung and urine.

"If upward of twenty per cent. profits, over and above all expenditures, have been and still can be made, on lands worth \$20 per acre by wool-growing—on lands, too, where the reign of an iron winter confines sheep to dry feed at least five months of the year—how are we to estimate those profits on lands costing but a small part of this sum, which, though inferior to the former, will, by reason of the shortness and mildness of the winter, support about an equal number of sheep per acre, and also save the expenses of preparing dry feed, of foddering, and a large proportion of that laid out in barns, shelters, &c.?

"It will be seen that, by assuming the data of the last of the two preceding estimates (with the exception of the loss by death), the gross cost of producing 300 lbs. of wool, on the grazing lands of New York, is \$82 16, or 27½ cts. per pound. This is undoubtedly as low as it can be produced where the fleeces do not exceed the average weight of 3 lbs. Let us now proceed to inquire what would be the gross expense per pound in the Southern States."

Here Mr. Randall goes into a very elaborate and able investigation of that point for which we have not room.

If we do not here, we will soon give for general information, the nature of the legal provisions in some other States against sheep-killing dogs—in the way of prevention or remuneration.

* Gazzeri found that 100 parts of recent cow-dung contain 25 per cent. of dry, solid matter, and that 5 per cent. of this is lost in 40 days by exposure to the air. I do not think this indicates the full loss which would be sustained in a southern latitude.

† These rounded pellets are covered, too, in the animal in good condition, with a coating of mucus, which farther protects them from evaporation.

‡ Their urine, also, is voided in quantities which render it highly beneficial; while that of the horse and cow is voided in such large quantities in one place that it is not only in a great measure wasted, but in a dry time (so that it is not diluted by the moisture in the soil), its rich salts, so far from benefiting, actually kill the verdure.

§ This is particularly true of the blackberry or bramble (*Rubus villosus*), and the raspberry (*Rubus idoeus*), often great pests on new or neglected lands at the North. Sheep can even be made to attack the elder (*Sambucus canadensis* var. *pubescens*), and various other troublesome intruders, by turning them upon them in thawing "spells," in the winter, after they have been for some time confined to dry feed.

|| The sheep eats a greater variety of plants than any other animal except the goat—it being supposed that the former eats 400 varieties of vegetables, while the goat will eat 500.—Edit. P. L. & A.

THE OHIO CULTIVATOR.

THE TRUE POLICY FOR OHIO FARMERS.

The CULTIVATOR says:—

Our editorial brethren in Ohio and adjoining States will oblige us by noticing in their papers the commencement of our new volume—stating terms, &c.

TERMS

ONE DOLLAR PER YEAR, for single subscriptions, or any number less than four. FOUR copies ordered at one time (they need not be to one address), for THREE DOLLARS, nine copies for SIX DOLLARS; and, at the same rate (three copies for \$2), for any additional numbers—payment always in ADVANCE, and all subscriptions to commence with the first number of a volume.

Though neither “in,” nor “adjoining” Ohio, our good will is none the less for the Cultivator and its intelligent, active, and animated editor, a favourite wherever he goes, and especially with the better half of creation, if we may judge by his being well placed at all the cattle shows, in positions that bring him into the midst of the fairest flowers of the vicinage. In addition to the constant desire to render a kind turn, not only to him, but to every brother editor, we have many good friends in Ohio, reaching up to Governor TRIMBLE, the well-known friend of Agriculture, Governor VANCE, the good friend of all that is good in the physical and moral world, Comptroller WHITTLESEY, who knows how to control oxen, as well as the expenditure of the public treasure, Senator CORWIN, and many other distinguished sons, native or adopted, of the Buck-eye State.

Grateful for such marks of confidence and good will in such quarters, how could we be indifferent to the success of a journal which, on terms as “cheap as dirt,” is doing so much to arrest the deterioration of the rich soils of Ohio, already much exhausted, by that improvident course of cultivation which has everywhere marked the progress of western settlement, and which *must continue* to mark it, as long as the policy of our government shall tend to break down all *other* branches of industry, in which men would concentrate, and be prosperous *customers* to the farmer; driving them all to yet more and more distant lands in the West, there to be the *rivals* of the farmer! Against this irresistible tendency, and these inevitable results, it is in vain to talk, while the same policy shall lead, as it must, to the same consequences. In vain will be the repetition of premiums for fat hogs, and fat acres. We must look for the worm that is *gnawing at the root of the tree*. Until *that* is dug out and killed, it will be idle to wash the branches. All the whale oil soap in Christendom, will not make the Ethiop change the colour of his skin, or wash out the leopard’s spots.

By the by, “we hope we don’t intrude,” as Paul Pry says, when we call attention to, and congratulate friend Bateham, on the *new features* that are breaking out on the face of his journal—the *cotton factory*, the *railroad car*, and the *canal boat*, are there, where they ought to be, in juxtaposition with the plough and the pitchfork. We look on these new marks as so many signs of a wholesome eruption. It shows that the truth is coming out. “*The truth is great, and it must prevail.*” In these signs, friend Bateham, Ohio agriculture must conquer all its difficulties, and make general advancement, if destined to conquer at all. There “are no two ways about it.” The question is between “*free trade,*” and—*protection of American labour*. Were a ship to be added to the symbols on the Cultivator’s escutcheon, emblematic of the dependence of commerce on the plough, and the loom, it would be but in perfect accordance with that perfect “harmony of interests,” which subsists between all those great branches of industry, when properly understood.

If the farmers of Ohio want to create a reliable market for their corn and their "twenty millions of bushels of wheat in a favourable season," (which the CULTIVATOR tells us they can produce,) for their beef and their pork; they must learn to repudiate and stigmatize, as suicidal and too "subservient," as General Jackson said, "to the policy of British merchants," that system of legislation, under which the Baltimore and Ohio railroad have been recently forced to *go to England*, to import, by one single order, near half a million dollars worth of *foreign agricultural produce, in the shape of rail road iron*, to be laid down in the very regions of this Union, in which, perhaps above all others, a bountiful Providence has scattered the materials for making iron, and where it would be made, *if, aye if*, agricultural and other American labourers could be forced, like English labourers, to work for \$1.50 per week, *and out of that, find themselves and their families!! \$75 a year!!* Let the farmers of Ohio look at the policy which, under the seductive and fraudulent name of "free trade," brings into competition with the labour of her freemen, the half-starved half-paid labour of European serfs *habitually called "servants,"* and when they have done that, and determined *to reform it*, they will have done more to secure prosperous agriculture for Ohio, than by all the cattle shows they can hold from now till doomsday—highly useful and commendable as these are. Men who can make so much more than they can sell, don't need to be told how to make still more, how to fatten a hog, or how to enrich an acre of land. They want to be told, *where and how near*, they shall find *prosperous consumers*, employed in other pursuits, in spinning and weaving her own wool, and in mining and smelting her own coal and iron, able and ready to *buy her beef and her pork, her corn and her wheat!* This is what Ohio farmers need, and what they ought to be told, by all who undertake to enlighten her sons in the true sources of her prosperity. Let Ohio, with her vast elements of wealth, population, and power, insist on a policy on the part of the general government, that shall tend to diversify labour, and to concentrate her sons within her own bosom, and common instinct will work out the rest. With wealth and population *will come education*, with education *will come virtue and knowledge*, and all the blessings that accompany and adorn the highest state of civilization. These are the lessons that the farmers of Ohio need to be taught, as the *great primary indispensable elements of practical agricultural improvement!* Where home industry is not protected, the tendency will be centrifugal,—it will be to go abroad into other regions, and wherever the tendency is to *disperse*, in that case there will *never be permanent general agricultural melioration*. You might as well expect the waters of the Ohio to leap up, instead of down the falls at Louisville.

Let those who think with us *say so*. Let those who think otherwise *say so*. It is the question of questions—not for politicians and demagogues, and slang whangers, seeking to get or to retain office, but for *practical farmers*.

"Free trade" is wrong, or it is right. There is no half way ground; and the great industrial interests of this country can never be settled or prosperous, *until that question is settled*, and settled in favour of placing, as Mr. Jefferson advised in 1816, "*the manufacturer by the side of the agriculturist.*" Let him who doubts read to the end the letters now appearing in this journal from H. C. Carey, and if not convinced, he would not believe, though a witness were to come from the dead.

LEGISLATIVE AGRICULTURAL CLUBS.

WE know not how others may think of it, but for ourselves, it would not be easy to express, in all its fulness, the satisfaction we derive from seeing these weekly agricultural meetings in full and earnest operation at the seats of some of the State govern-

ments, composed of men whose official and highest duty it is, to study how they can best promote the prosperity of agriculture. What sign can be more propitious and indicative of a wholesome public spirit in regard to that great interest of our country?

We can't make room for everything, or we would strain a point to publish the remarks of Col. WILDER, the President of the Senate of Massachusetts, at one of these meetings lately, where the subject was *Agricultural Education*.

He suggested, says the report before us, three plans which might be worthy of consideration. 1st. The establishment of a central school with an experimental farm. 2d. The establishment of such schools in every agricultural county in the State—or the engrafting of these upon institutions now existing; and 3d. The introduction of the elements of agricultural and horticultural science into our public schools.

At the same meeting, Mr. TESCHEMACHER, one of the most skilful practical chemists in any country, announced the discovery by A. A. HAYES, M. D., State Assayer, of a means of effectually arresting the progress of the *rot in potatoes* after they have been gathered, by *sulphureous fumigation*. Pressed now for room, we have to postpone Dr. Hayes' own description of the discovery and process. We can only promise our readers to preserve it, and to give it in time for application to any future crop. We do not doubt the efficacy of the application in the way recommended.

Would that all the legislatures in the Union would follow the example of forming agricultural clubs during the session. No re-union of the friends of Agriculture could be better devised to spread over a whole State the knowledge of whatever is new and useful in the products and processes of any part of it. Why not form such clubs at Harrisburg, Annapolis, Richmond, Montgomery, Ala., Baton Rouge, Trenton, Dover, &c. &c., while the legislatures are now in session?

ON THE FISHERIES OF NORTH CAROLINA.

BY LEMUEL SAWYER, ESQ.

THE following paper from a citizen of North Carolina, discloses to us a new and highly interesting view of a considerable source of wealth and industry, in that ancient and always patriotic commonwealth.

Let those who may be at a loss to know how such subjects can be brought within the purview of an agricultural paper, be once for all advised that we have spread a wide net, and that "*all is fish*" that comes within it, appertaining to the development and fruition of our internal resources of comfort and profitable application of labour, whatever it may be. And besides, we should like to know what any *farmer*, residing within striking distance of the Potomac fisheries, would think of the question, should any body ask it?—*how do these fisheries concern you?* Even as one means of diversifying labour and opening another source of subsistence, the possession of fisheries in any neighbourhood is to be accounted one of notable value, wherever to be found.

We hope to obtain for publication from the same well-informed and highly competent authority, a sketch of the peculiar capabilities of the same State, for the *manufacture of wine*, and also of the uses and value to her of the *long-leaved pine*. How usefully might such a pen, guided by a mind so inquisitive and so well informed, be employed in a *Bureau of statistics*—an office which, as we have repeatedly said, every State in the Union, with a due perception of its interests, should hasten to establish.

Who can fail to agree with the writer as to the expediency of adequate provision and facilities for collecting, and arranging systematically, all the statistics that would go to illustrate the rise and condition of an important branch of industry and wealth like this; to the end, that the statesman or legislator might at once put his finger on the requisite information, that would enable him to understand, to protect, and to extend it. And so of all other branches of our internal resources. Yet let any man say to Congress: "We want you to provide for, and to appoint an officer, with the necessary assistance, to gather and systematize all the facts connected with the fishing industry and pursuits of the United States; the quantity taken of each kind, and

where; the capital and force employed; the interests involved, and its bearing on our naval and other resources; and its susceptibility of being extended, or impaired, by wise or improvident legislation." Make such a proposition to your law-makers, and, ten to one, the only answer would be—"What an odd fish that fellow is!" The same should be done as to our facilities and capacity to make wine and silk, and duties laid on both that in a few years would bring thousands of men and of capital, with the requisite knowledge and machinery, to make in the Carolinas, and Georgia, and Alabama, all the wine and silk we now have occasion to import, at the cost of so many millions—and these Italians and Frenchmen would be so many customers to the planter and farmer. All however is coming round—"Rome was not built in a day!"

For the present, however, all these matters are too plain and vulgar to engage the attention of Congress; but for a *military* department, or exploration, or inquiry of any sort, no expense is too great; especially if the promise be to kill the greatest number of men, at the greatest possible distance, and at the least possible expense of time and gunpowder. So we go. Ah! we are a wonderful people.

This letter was addressed to the Census Board, in reply to one of their circulars, but not coming within their forms of publication, we have been kindly permitted, by the writer, to present it to the readers of "The Plough, the Loom, and the Anvil."

Washington, May 18th, 1849.

GENTLEMEN: The product of the seas, or the fisheries of the United States, deserves, by its importance and increasing value, a separate desk to be devoted to that subject. The fisheries contribute largely to swell the amount of our exports, besides affording an important article of exchange and barter in the internal trade of the country. I propose to take up the consideration of this fertile subject of inquiry, and make it the principal theme of my first communication to the honourable board. It must be limited, even then, to the comparatively narrow circle of my native State, where alone I have had personal knowledge and experience enough to enable me to speak authoritatively.

In examining the column under the head of "fisheries," in the compendium of the last or 6th census, which rendered an account of the number of barrels of salted fish put up for the market, I find the returns but barren and far below the actual amount. I am well acquainted with the various fisheries of the rivers emptying into the Albemarle Sound, and on the shores of that large body of water, in which I think more shad and herring are caught than in any other district of the same extent in the United States.

In the county of Chowan, where the principal fisheries are established, the return is put down only at 18,000 barrels. There must be a deplorable falling off in the yield, if the amount for the present season does not double that, embracing the various landings from the mouth of the Chowan River 8 miles or so, below the town of Edenton, to the termination of navigation above the town of Winton. If the quantity caught on the Bertie and Hereford shores of the river be included, the imperfection of the return is still more glaring. I would advise that the fish caught in this river, as well as elsewhere, should be classed under their two distinct heads of shad and herring. They are now confounded, and we can never know, under the present order, what number of barrels contain shad and what of herring. It is very desirable to obtain certain information of the amount of each kind thus put up, that we may estimate their comparative quantities and value, in order to know to which we should give credit for the largest source of our export trade. A considerable quantity of herring was formerly, and I believe is still, shipped to the West Indies, particularly to St. Domingo; as an article of food, they enter largely into the consumption of the black population abroad as well as at home. A large amount is also shipped coastwise and by internal navigation to the ports of Baltimore, Philadelphia, New York, Providence, and Boston—thus contributing essentially to swell our domestic or home trade, and to give active employment to our licensed tonnage.

Below the mouth of Chowan River, the Sound is broad, being in breadth from the shore of Chowan, to that of Tyrrel or Washington, about 14 miles. The seines used there are generally a mile in length, as they have to be laid out a considerable distance from the shore, it being quite shoal water within the distance of half a mile. A large gang of hands is required to work them, generally 30 or 40 hands, besides the scores of women, principally negroes, to clean the fish. The rule is, not to let a fish be over two hours out

of water before it is in pickle. I have known 200,000 herrings hauled on shore at one draw; the power applied in addition to the hands, is a capstan turned by two or more horses to wind up the warps, bring home the seine, and land the fish. Six thousand shad have been caught at one drag this season, and larger quantities are caught there than at any equal number of fisheries on the Potomac.

There is some deception, for want of discrimination in reporting the different kinds of fish in the return from Beaufort. It is estimated at 4000 barrels, and one might infer they were the usual kinds, shad and herring. But those fish constitute *a small portion of the amount*. They are mostly of a sort of fish peculiar to that inlet and the waters of Pamlico and Core Sounds. They are the *large mullet*, and a *blue fish*, similar in size and appearance to the No. 1 mackerel, and are of *a most delicious flavour fresh or pickled*. I should estimate the amount caught about Ocracoke and Beaufort and the intermediate shores at 10,000 barrels. A considerable trade is carried on in the barrelled mullet by small vessels to the ports and landings up the fresh water rivers emptying into those Sounds and the Albemarle; as the Chowan, the Roanoke, the Perquimans, the Pasquotank, and thousands of barrels are thus distributed, many being transported along the Dismal Swamp canal and through to Norfolk. Some have been shipped to New York from Wilmington, but the people not being accustomed to them, would not purchase, though at a much lower rate than mackerel, and so the experiment failed. It is usual in eliciting information on this and similar subjects, to propound several interrogatories through the marshal of the district, or other agent, to the principal proprietaries of the fisheries on the region whence the information is to be derived. In fulfilling that plan I would propound the following or similar inquiries:—

- 1st. What is the average amount of shad caught at your fishery in a season?
- 2d. The same in regard to herring?
- 3d. What is the greatest number of either you have caught at a single draw?
- 4th. At what time in the Spring do you commence fishing—and which kind make their appearance first?
- 5th. How many barrels of shad have you put up at the present, and at the last season, and what is the requisite number required to fill a barrel: what the selling price per barrel?
- 6th. What amount of herring did you catch this and the last season, what amount sold fresh, and how many barrels have you put up, of whole and of gilled or cut, and what the average price of each?
- 7th. What amount, as far as you can estimate, from data within your knowledge, have been caught in the Albemarle Sound during this Spring, 1849, first of shad, next of herring?
- 8th. What is the cause of the gradual diminution in the annual run of shad and herring, and at what per centage do you estimate this annual falling off?
- 9th. What remedy would you recommend to check this growing evil?

I beg leave to refer to Col. R. T. Paine, of the Mexican commission, for further information, and to Joseph B. Skinner, Esq., of Edenton, who has been largely and successfully engaged in former years in carrying on the fishing business in this locality. To whom I might add the Postmaster and the Collector of the port of Edenton, as likely persons to give satisfactory answers to these inquiries. The town of Plymouth, on the Roanoke, is of course, the centre of trade in these commodities procured in those waters, and the Collector could afford the required information. The Hon. David Outlaw, who lives at Windsor in Bertie, could inform you as to the amount of fish taken in the Cashie, one of the estuaries of the Chowan, as well as the quantity caught between the mouth of the river and the town of Winton in Hereford county. A large amount of herring are taken in the Scuppernong in Washington, at the head waters of which is a *pond or cul-de-sac*, in which such shoals of herring are confined, that they are dipped up in common hand nets, and vessels of considerable size loaded in the course of two or three nights. Mr. Donnell represents that county, as a part of his district, and no doubt would afford you all the information sought for, in regard to that *most remarkable natural fish trap*. The inquiries might be extended to the fisheries on the Perquimans river and especially to the Yeeopim, where the first shad of the season, as early as the 20th of February, are caught in gill nets, transported in carts to Elizabeth City, and through the Dismal Swamp road to Norfolk; from thence they are sent by the steamers to Baltimore and to our market, weeks in advance of those of our waters. The Pasquotank River and the Newbeju Creek have extensive fisheries on their shores, of which the Collector of the port of Elizabeth, District of Camden, could give you some account.

A vast amount of shad are caught from the middle of February at the Roanoke marshes the foot of Albemarle Sound, mostly in gill nets. A considerable traffic is carried on in them by sloops and schooners from New York and the North, whose return cargoes are put up in ice, are delivered fresh and yield a large profit. The trade, however, is so prejudicial to the fisheries above, that the Legislature of North Carolina, by severe penal

enactments lately passed, have broken it up by prohibiting the use of nets within the narrow channels that intersect the marshes of Roanoke Island, so as to allow the shad a free entrance into Albemarle Sound. The search for information need not extend further south than the Savannah River, as few or no shad and herring are known to strike our coast to the south of the Cape of Florida. We thence proceed northerly to the shores of the Chesapeake, Lynhaven Bay, and the James River and its tributaries; thence to the Rappahannock, and beyond these to the Potomac, which is the great fishing ground. The celebrated landing of the White House, below Mount Vernon, yields the greatest amount of both kinds, and it would be desirable to have the benefit of the proprietor's knowledge as to the annual amount taken there. At Crany Island is also a very important fishing station, and here it is stated the greatest destruction is dealt to the spawn and young of the fish, by the abuse of the advantage which the location affords in running the seines across the channels quite over to the Maryland shore, and trespassing upon the grounds of its fishermen. This was done in the night time, to avoid detection, and it excited such angry feeling on the part of the proprietors who were thus injured, that the long seine was severed, and made into two. Of this wholesale destruction of the spawn and young of the two species of these most useful of the finny tribe, great complaint is made by the fishermen of the upper landings, who are thus unfairly cut off from their annual supply, and who complain of a sensible falling off in the run of the fish, which threatens in a few years more a total failure. It would be advisable for them, and all the adjoining inhabitants to petition the Legislature of Virginia for a redress of this grievance, by setting apart one day in the week, Sundays especially, for the cessation of operations, by limiting the length of the seine and such other provisions as prudence and wise counsels dictate. The field of inquiry on this subject extends with undiminished interest, from the Delaware River to Passamaquoddy Bay, including the North or Hudson River, where vast numbers of shad are caught in gill nets, in the very harbour of New York and across the river, near its mouth to the shore of Jersey City. They are large and of superior quality, and as far as my taste may be appealed to in deciding as to the flavour of these and all other kinds of fish, I should give it in favour of those caught in salt water. They contain a certain quantity of oil, when fresh from the sea, which appears to be parted with, or perceptibly reduced, in their progress through a long course of fresh water. In fact, I think they become poorer the further they ascend from their native element.

In regard to the mackerel and cod fisheries of the Atlantic coast, I would suppose that they were a distinct branch, and deserve by their importance a separate clerk to do justice to this fruitful subject of investigation. While the shad and herring fisheries are confined to the shores, principally of our fresh waters, and seines are the instruments used for their capture, the mackerel and the cod are inhabitants of the sea, and are taken at sea by hooks and lines, in vessels fitted for the especial purpose, and which are properly encouraged in their occupation by liberal bounties. Their use enters largely into our home consumption, and they constitute no inconsiderable sum in our exports. I think the whale and seal fishery should likewise be separately considered, and detached from that of the mackerel and cod fishery. The centre of trade, and of course of information in regard to the two former subjects, is Boston, and of the last, or whale fishery, Nantucket, New Bedford and Sag Harbour, to which points the inquiries should be directed. It is believed that a full account of our internal and external fisheries, when collected from their various sources of information and properly compiled and arranged under their several heads, would compose a volume of statistical knowledge, highly useful in estimating the relative sources and value of the different branches of our domestic enterprise and industry, and in showing the importance, in the aggregate, of this great source of our domestic and foreign trade, as well as proving to what degree of utility it has arrived as a nursery to our hardy, enterprising, daring, and skilful seamen.

There are two other heads of inquiry and information contained in the schedule of the compendium of the 6th or last census, the subjects of which, so far as they relate to my native State, North Carolina, I profess to be personally conversant. That is, the vintage, and the products of the long-leaved pine, or *pinus terebinthina*. Should you honor me so far as to deem any contribution of mine, on these subjects, worthy of your acceptance, it shall be my pleasing task to make my next communication in the course of two or three days, the medium of such information as I may possess.

I conclude this chapter on the fisheries, partial and imperfect as it is, confiding to other and abler hands, the task of completing the history of the ichthiological branch of our national resources and prosperity.

I am, gentlemen, with the greatest respect and consideration, individually and officially,
Your obedient humble servant,

LEMUEL SAWYER.

COTTON MILLS IN NEW ENGLAND.

THE following statement is taken from an article by A. A. LAWRENCE, Esq., published in Hunt's Merchants' Magazine for December. Mr. Lawrence, it would be superfluous if not officious for us to say, is a gentleman of the highest respectability, residing where there exists the largest amount of experience in the manufacture of cotton; a subject of which we profess to have no, or very little, personal knowledge.

"The profits of manufacturing are so often over-rated, that it is with difficulty that the truth can be believed. The well-managed New England mills have been as successful, during the last ten years, as any in the world—certainly more successful than in any other section of the United States; though for many years after their first establishment, they brought great losses upon the stockholders. The following table will show the results of the business of the best establishments :—

DIVIDENDS OF THE NEW ENGLAND COTTON MILLS OF THE FIRST CLASS.

Name and location.	Capital.	1839.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.
Appleton, Lowell	600,000	5	5	6	o	6	6	12	12	3	5	3 a 6
Atlantic, Lawrence	1,300,000	x	x	x	x	x	x	x	x	x	x	o
Boott, Lowell	1,200,000	11	4	11	3	5	10	18	16	8	5	2
Boston,† Waltham	450,000	6	3	6	o	3	8	5	10	6	4	4
Cocheco,‡ Dover, N. H.	1,300,000	6	o	6	o	o	3	6	6	6	6	6
Cabot, Springfield	690,000	6	3	9	5	11	20	20	16	4	3	6
Chicopee, Springfield	340,000	9	o	3	o	o	7	12	9	3	o	3 a 6
Dwight, Springfield	730,000	x	x	x	3	11	18	20	16	9	6	4 a 8
Great Falls, Somersw'rth, N. H.	1,500,000	o	o	9	5	3	17	20	a12	10	8	6
Hamilton, Lowell	1,200,000	o	5	8	o	6	7	14	10	6	5	3 a 6
Jackson, Nashua, N. H.	480,000	5	25	3	2	3b16	20	18‡	9	8	4	a 7
Lawrence, Lowell	1,500,000	10	3	7	2	7	16	14	15	10	3	6
Laconia, Saco, Maine	1,000,000	x	x	x	x	x	x	x	3	3	o	o
Lancaster, Clintonville	1,000,000	x	x	x	x	x	x	x	x	o	o	o
Massachusetts, Lowell	1,800,000	x	x	o	3	4	14	20	20	19	6	6
Manchester Mills,§ Manch., N. H.	1,200,000	x	x	x	x	x	x	x	.	loss	o	o
Merrimac, Lowell	2,500,000	11	8	12	9	16	10	30	16	9	7 r25	
Nashua, Nashua, N. H.	1,000,000	10	o	8	3	6	8	20	18	6	3	4 a 8
Otis, Ware	450,000	o	o	o	o	10	10	12	8	13	6	18
Palmer, Three Rivers	160,000	20	8	10	6	9	16	25	21	9	3	o
Perkins, Springfield	700,000	5	5	6	o	9	20	20	13	9	6	2 a 6
Salm'n F'ls,|| Salm'n F'ls, N. H.	1,000,000	x	x	x	x	x	x	x	25	8	8	4 a 8
Stark, Manchester, N. H.	1,250,000	x	x	8	2	o	14	18	20	11	loss	3
Suffolk, Lowell	600,000	11	8	11	3	6	14	20	18	8	6	5
Thorndike, Three Rivers	375,000	o	o	11	3	5	14	15	15	3	3	6
Tremont, Lowell	600,000	11	7	8	2	6	16	18	16	7	2	3
York, Saco, Maine	1,200,000	16	12	9	7	6e17	18	20	11	6	f 3	

* Almost all these were taken from the books of the companies, or furnished by the treasurers.

† These dividends are upon \$1,000 a share. The valuation has been reduced, and the shares are now valued at \$750.

‡ The original investment of \$1,000,000 was all lost.

§ Wool is mixed with cotton in the greater part of their goods.

|| This company became embarrassed, and the property was sold to the present proprietors at one-third of the cost.

(a) Also a dividend in stock of 25 per cent. The shares in this company were originally \$1,000; but, owing to embarrassments, new shares were created at \$200, which is now considered par. Upon the costs these dividends would be much smaller. (b) Also 10 per cent. from profits made previously. (r) This was principally in new stock, and was not earned this year. The dividends of this company have been much larger, owing to having reserved their profits in years previous to these. (e) Also a dividend from previous profits of 10 per cent. (f) And a dividend of stock of 20 per cent. Manufacture fancy wove goods.

The mark "x," in the statement of dividends of New England mills signifies that the

"The following table, prepared by Messrs. Head and Perkins, Stock Brokers, shows the present price of shares, and when there have been no sales, the price they would bring if put into the market. The difference between the par and the present price is just so much loss, which should be subtracted from the dividends, in order to judge fairly of its business.

MARKET AND PAR VALUE OF SHARES IN FIRST CLASS COTTON MANUFACTURING ESTABLISHMENTS.

	Market price.	Par value.		Market price.	Par value.
Appleton - - -	800	1,000	Manchester Mills - -	750	1,000
Atlantic - - -	670	1,000	Massachusetts - -	900	1,000
Boott - - -	850	1,000	Merrimac - - -	1,120	1,000
Boston - - -	600	750	Nashua - - -	450	500
Cabot - - -	750	1,000	Otis - - -	1,050	1,000
Chicopee - - -	600	1,000	Palmer - - -	750	1,000
Cocheco - - -	500	650	Perkins - - -	750	1,000
Dwight - - -	800	1,000	Stark - - -	800	1,000
Great Falls - -	185	200	Suffolk - - -	900	1,000
Hamilton - - -	770	1,000	Salmon Falls - -	450	500
Jackson - - -	840	800	Thorndike - - -	650	1,000
Laconia - - -	850	1,000	Tremont - - -	875	1,000
Lancaster - - -	315	450	York - - -	930	1,000
Lawrence - - -	900	1,000			

"Many smaller mills have been equally successful, and many have embarrassed the owners, and passed into other hands during the same period.

"We shall hereafter give some facts in regard to the value of water-power at the present time in the coal districts of England, which will show that, after long experience, the English manufacturers prefer to buy water at a higher price than is paid in any part of this country, though they can have coal for their steam-power at from 4 to 5 shillings a ton, certainly as low as in any of the cotton-growing States."

So far Mr. Lawrence,—nevertheless the papers in that region recently, represent the factories in Carolina and Georgia as doing a good business; while we very much doubt whether, on the whole, the entire capital in land, labour, &c., employed in agriculture in some states south of Delaware, yields the one-tenth of one per cent., if in making up the amount, we strike, as we should do, a balance between the aggregate melioration and deterioration of the land throughout the State—for, is there not, on the whole, more subtracted than is added to its fertility, diminishing the capital by the amount of the difference? These are the questions worthy to employ the careful deliberation of legislation, and which they should take measures to ascertain, by the establishment of statistical bureaux and otherwise. But alas! too many legislators think more of the *per diem*, than of the appropriate duties of that *highest of all offices—the making of a country's laws!*

ON OFFERING PREMIUMS FOR FAT ANIMALS.

It has been, with strong show of reason, suggested in an English paper, that where premiums are offered for *fat* animals, the candidate should exhibit a Dr. and Cr. account, and be expected to prove that the whole process of rearing and fattening was a profitable one. "I would," says the writer, "suggest, as an incentive to exertion, that the Agricultural Society should

mills were not in operation during those years. In many cases there were losses where the mark is "o." There are other establishments as large as these, which have been embarrassed by deficient water and other causes, which prevent their being placed in this list of first class mills.

offer 100*l.*, to be given at the next meeting for the six best oxen ready for the London markets, each returning to the owner a fair profit for his maintenance—a Dr. and Cr. account to be produced. Nothing should be reared or fed on a farm without the prospect of gain.”—*Falcon*.

Cattle shows should not be conducted on the principle of Menageries or Museums, where anything will answer that will serve to attract and gratify the idle or the curious. They should illustrate only what is economical, useful, and exemplary; and, as said above, no premium or distinction should have the sanction of a society, unless it be proved that it would be advantageous and profitable for farmers generally to aim at like results—whether it be a big or fat crop or animal. To give premiums for grossness or singularity, or monstrosity, is worse than ridiculous on the part of those who award them, and an insult to the public judgment.

HEMP AND FLAX.

OUR attention has been invoked to this subject, by a distinguished member of Congress from the west, on which account, even independent of its intrinsic and obvious importance, we desire to collect the best information to be had, and especially as to any improvement in the machinery of preparation and manufacture, that may promise to place it nearer, in point of cost to cotton fabrics.

We are well aware that in the following items cut from English papers just received, there is little or nothing new and practical. Our object now is merely to start the inquiry—to unkennel the game—intending to pursue it with such force and by all the lights we can command.

Some years since, if we remember, the American Institute proclaimed the discovery of the great desideratum, in an invention by a Mr. Billingsly. Since then, there was exhibited by that active and distinguished promoter of agricultural improvements, Lewis Sanders of Kentucky, a contrivance invented by Col. Anderson of Louisville, of the efficacy of which we entertained the strongest hopes—for we know of no one whose inquiries had been so extensive or directed in a spirit and with a judgment more likely to result successfully—yet we have lately heard nothing of it. Should this respectful inquiry for information meet the eye of either of these gentlemen, as we will endeavour to make it, we should be grateful for any attention they may be pleased to bestow on it. The subject is one which interests a large portion of the United States, and is in itself one of great importance as connected not only with the wealth of the western country, but almost with the independence of the whole country. In fact, we do not see why hemp culture may not, when they are penetrated by railroads, as even we hope to live to see them, be a fruitful source of income to the rich valleys of the Alleghanies, from Maryland to Georgia. Let us have light—surely not a little may be expected to emanate from the office of the commissioners of the navy, to which, as to other sources, we shall have recourse.

Cultivation of Hemp.—Hemp may be cultivated on the western coast of Ireland, where it would be of great use, as affording material for the nets, lines, and cordage of the fishermen, who are generally destitute of these necessary articles. It might be grown by themselves, and scutched, spun, and twisted, or netted, by their wives and daughters. The quantity of this article imported, annually, into Great Britain and Ireland, is about 45,000 tons, valued at 1,600,000*l.* About one million sterling of this comes from Russia. In entering upon the cultivation of hemp, the first thing to be attended to is the selection of proper soil; the best suited for hemp is a deep black vegetable mould, with a low situation, and inclined to moisture; it does well on a rich clayey loam, and old meadow

land is well adapted for it. The mode of preparation, and the place in the rotation, are the same as for flax. The proper season for sowing is April, as soon as there is no danger of the young plants receiving injury from the frosts. The seed is sown broadcast, from two to three bushels to the statute acre, according to the quality of the land. The quality of the seed must be fresh, heavy, and bright in colour. Hemp is one of the few plants employed in the agriculture of these countries, in which the male and female flowers are in different plants, which circumstance has some influence in its management, so far as taking it off the ground is concerned. When the crop is grown entirely for the fibre, it is pulled when in flower, and no distinction made between the male and female plants. But, as is most commonly the case when it is cultivated with a view to both fibre and seed, the usual practice is to pull the male plants, the stalks of which are easily known by their yellowish hue and faded flowers as soon as the setting of the seed in the females shows that their presence is no longer necessary. The reason for thus pulling the male so long before the female is, that the latter requires four or five weeks to ripen the seeds. The operation of pulling the females commences when the seed is ripe, which is known by the brownish hue of the capsules and the fading of the leaves. The after treatment, such as steeping, &c., is the same as flax.—*T. S.*

Dry Process of Preparing Flax.—In the year 1810, a new method of dressing flax was patented, by which the woody matter was separated from the fibre without steeping it, by means of mechanical action, and then the flax was bleached by simply washing it in warm water. It would appear that the colouring matter is not chemically combined with the fibrous matter, while the plant is vegetating, or after it is pulled, but that the chemical combination takes place while the plant is steeped in water. The object of this steeping is to induce a fermentation, which loosens and destroys a cement which bound the fibres of flax to each other and to the wood. The fermentation weakens considerably the strength of the flax fibres, and even destroys many of them. This dry preparation, therefore, if it be practicable on a large scale, would be a prodigious improvement. It would render the flax fibres much stronger, it would increase their quantity, and it would save the expense of the materials employed in bleaching the linen. It has been stated that the dry process has uniformly failed of success, when tried in Ireland. If this account be true, it is extremely difficult to explain it. About the time when the patent was taken out, the process was performed by workmen, under the direction of the patentee, at Old Bow, near London, with the most complete success; not merely upon handfuls of flax, but upon whole fields of it. Indeed, the whole is so extremely simple, that it is difficult to explain how it should fail, if properly conducted. It is therefore highly probable, that the prejudices of the Irish, with which it would have had to contend at that day, were too powerful for it; but that as soon as it shall meet with fair play, it will be found just as practicable, and certainly much cheaper and better, than the methods at present in use. It is during the steep, then, that flax acquires its permanent dark colour; and four processes in bleaching are requisite to restore it to its original white colour, or to separate the colouring matter, which is chemically combined with the fibres of the flax.—*T. S.*


CHINESE HEMP.

FRENCH agriculture has recently been enriched by a very important new production. This precious article is the Chinese hemp, the *Lo ma corchorus*, the seeds of which were imported into France by M. Stier, a member of the French embassy in China, and has been cultivated and naturalized at Marseilles by M. Garnier Savatier. This hemp, the reproduction of which is now secured by the seeds which have ripened in the best possible manner, grows to a height of twenty-four or twenty-five feet; the stalk is from five to six inches in circumference; each plant produces from two to three kilogrammes of seed, and furnishes thread enough to make a yard of superb lawn, superior in beauty and quality to any obtained from French materials. The cultivation of this plant in the south of France will be the more precious to the country as a climate of the temperature of that region is necessary for its fructification, and its seeds will find a ready sale in other countries where the seeds will not ripen, but where the filaments may be produced. The South will thus have a double advantage. Some specimens of this plant were exhibited at the Agricultural Show at Montpellier. The height of it was from twenty to twenty-two feet.

For "The Plough, the Loom, and the Anvil."

"EVERY MAN HIS OWN GARDENER."

GARDENING OPERATIONS.—March is a busy month with the gardener, requiring energy and judgment, with a determination to accomplish whatever he undertakes. No farmer should be without an abundant supply of vegetables throughout the year; it is a daily comfort, a precursor of health, and with many a luxury, that from a dilatory disposition he rarely enjoys.

The first crops in the ground should be peas, beets, radishes, potatoes, carrots, cabbage, and onion sets.  Manure well and dig or plough deep. Sow extra early and marrowfat peas in rows, the former two feet and the latter three feet apart, and three inches deep. Beets in rows eighteen inches apart, and the seeds about two inches apart and one inch deep. Scatter a few seeds of early scarlet radish over the ground before it is raked; they will be up in a few days, and fit to pull before the others have made much progress; pull the radishes as soon as ready, hoe the ground well, and thin out the beets next month to four inches apart. Sow a patch of yellow or white summer radish. Sow early butter and Indian lettuce; the first will be ready in May, the other in June. Sow celery in rich, light, warm soil; make the earth fine, and water freely; it is a profitable market crop. Sow onion seed very thick in shallow drills to grow sets for next season. The early horn and Altringham carrots are the best flavoured; sow the former in drills eighteen inches apart, and the latter twenty to twenty-four inches. They do not like richly manured soils. Sow tomatoes in a pot or box for an early crop; place it under glass or in the kitchen window, where it will appear quickly and be ready to plant out about the end of April or towards the middle of May. A few early turnips are advisable; if you do not sow early, you will not have a crop till the fall sowing. Cabbage are indispensable (so I think); sow early York, oxheart, and drumhead, and make a second and larger sowing of the latter to plant out in June, for fall and winter use; also remember red Dutch cabbage for pickling, they are a beautiful garniture for the table, and to many very palatable.

In *southern latitudes*, they should now plant beans of every kind; **EARLY SIX WEEKS**, or snap-shorts as dwarfs, and **LIMA** for poles; the latter require to be four feet apart, and three feet from hill to hill; plant the dwarfs between the rows of poles; they will be off before the runners shade them. Economy of space is a nice art in gardening; and study to arrange crops to have all the ground profitably engaged. Sow peppers, cucumbers, melons (the netted citron is the best table melon, and the mountain sprout is the best water melon); plant okra, tomato, bush and green squash, egg-plants, in very rich ground, eighteen inches to two feet apart; take off an early crop of radishes from the same ground, or a crop of early cabbage lettuce. Com. Adams' extra early for the first, and sugar for second crop.

FRUITS—The greatest error in country life is the *putting off* system of planting; the hurry of spring delays it till the fall. Time never procrastinates, and is again at hand, the same delay and apology are again employed; we put it off till another year, which soon rolls round, and we again use another subterfuge, and pass it off because we cannot get or purchase trees with the fruit hanging ripe and luscious. Plant now the best you can get; and if you cannot beg or buy trees, sow and plant seeds; if there is no orchard-room, plant along every fence apples and grape vines alternately, twenty feet from plant to plant; use the best soil you have or can procure; dig the holes eighteen inches deep, and three to five feet wide; spread, after planting, a few forkfulls of manure or litter over the surface round the tree; it is both a protector in dry weather and a nourisher in growth. A handfull of guano mixed with a shovelfull of leached-wood ashes, spread over the surface, under the litter, is very stimulating. Plant pear trees in or adjoining the garden—or prepare a small orchard for them. Plant fruit trees, and you will have a great chance of reaping the harvest. Cover the barns with grapevines and apricots; surround the pig-pen with plum trees, and plant the cherry trees on a dry deep soil; select early and late sorts, which gives a longer period of *pie-time*. Plant strawberries in rich deep soil, well manured, alternately one foot and two feet from row to row, giving space to walk amongst and dress them when required; nine inches from plant to plant in the row will do; plant for the first season a row of cabbage in the wide spaces.

If you have old apple or pear trees of worthless sorts, thin out the old spray wood and small shoots, and graft on fine sorts; a good kind requires no more care nor culture than a crab-apple or choke-pear, with the difference of four hundred per cent. in your favour. Graft plums and bud cherries.

FLOWERS.—Those cheerful and loving emblems of innocence must have their allotted spot; no home can have all its associations without the rose and the lily—they are fit objects to be cultured by the female hand, objects that sweeten household cares, that

elevate the aspirations of the heart, that diffuse the finest feelings in the youthful mind; where flowers are, peace reigns.

[Old people of Maryland and Virginia, on the wrong side of sixty, let your memory carry you back to your childhood. Were not the gardens of your mothers and grandmothers larger, better tended, and more variegated with pinks, and lilies, and roses, and fleurs de lis, and snowballs, and the mock-orange bush, in which the confiding little sparrow built his nest, than gardens are now? Why is it so? It's a melancholy retrospect, but still the question will recur—Why is it so?]

ON THE SIZE AND WEIGHT OF POULTRY.

Mr. ASA RUGG, writing for the Boston Cultivator, makes some interesting observations on this subject. He says, among other things:—

"I have no hesitation in saying, that in the *large breeds and varieties*, we are much in advance of the English breeders: for any cabin boy knows that the fowls shipped for use on the voyage in Liverpool, will not favourably compare with those procured in the ports of Philadelphia, New York, or Boston. And as some of your readers may, in the present stage of the '*chicken fever*,' be inclined to send to England for some of their large fowls, perhaps the Cochin China, as they seem to be the chief attraction, I will record some of the results of my experience and correspondence, for their especial benefit."

Of the famous Cochin China fowl, presented to the Queen of England, and of which so much (probably in great measure for that reason), has been said, Mr. Rugg observes:—

"Now, I doubt whether the fowl, as thus described, is anything more or less than the wild Shanghæ, found in the mountains of Northern China, of which I have a few beautiful specimens imported in 1847. As we have no history of the queen's fowls, of course we are left to infer the place of their nativity from their reputed characteristics. They agree so much in description, and, also, as I shall show, in weight, with my pure wild Shanghæ, which weigh, when full grown, from 15 to 16 lbs. per pair, that I have little or no hesitation in saying they were born and bred in Northern China, and not in Cochin China. My Chittagongs and Cochin China which come, the one from the vicinity of Calcutta, and the other from Southern China, are, as I shall show, considerably larger. From gentlemen with whom I have corresponded I recently learned the weights of several specimens of fowls in England, which I shall now put in juxtaposition with some of my own.

POULTRY RECENTLY WEIGHED IN ENGLAND.

Dorking cock, 2 years old	.	.	.	.	7 lbs.	4 oz.
Dorking cock, age not named	.	.	.	.	6	12
Malay cock, young	.	.	.	.	8	
Cochin China cock, two years old	.	.	.	.	7	9
Cochin China stag, 2 years old	.	.	.	.	5	8
Cochin China hen, moulting	.	.	.	.	5	5
Cochin China stag, moulting	.	.	.	.	5	2
Malay hen, moulting	.	.	.	.	5	6
Malay pullet, moulting	.	.	.	.	4	5
Dorking hen, full grown	.	.	.	.	6	2
Dorking pullet, full grown	.	.	.	.	4	6

"I refer your readers to Mr. Dixon's treatise for a more extended list of weights, who will still further confirm the assertion, that in point of weight, our fowls are superior.

POULTRY WEIGHED THIS DAY IN MY OWN YARD.

Cochin China cock, 13 months old	.	.	.	.	11 lbs.	4 oz.
Cochin China stag, 8 months old	.	.	.	.	9	12
Cochin China pullet, 7 months old	.	.	.	.	6	10
Cochin China pullet, 8 months old	.	.	.	.	7	2
Chittagong stag, 8½ months old	.	.	.	.	10	6
Chittagong pullet, 7 months old	.	.	.	.	8	7
Chittagong pullet, 8 months old	.	.	.	.	9	2
Chittagong pullet, 6 months old	.	.	.	.	6	12
Chittagong hen, 2 years old	.	.	.	.	10	6

"I have a Chittagong hen 3 years and 3 months old, which last Spring weighed 13½ lbs., she being, however, a *rara avis*, should not be regarded as a fair sample.

"The English fowls were weighed about seven weeks since, when scarcely over the effects of moulting; this might make a difference of a pound or a pound and a half in

their favour over fowls weighed now ; but even then, the balance is still heavily in our favour."

Mr. R. S. COLT, of Roswell House, New Jersey, to gratify our (the reader will perhaps say idle) curiosity, lately had some of his poultry, which we had seen and admired, weighed alive. His

Wild turkey gobbler, 17 months old, weighed	20 lbs.
Black turkey gobbler, 18 months old, weighed	21
Malay dunghill cock, 18 months old, weighed	11
Black Java dunghill cock, 17 months old, weighed	10
Jersey Blue, 17 months old, weighed	9
One pair black Java pullets, 7 months old, weighed	12

This was, he says, on "the run of the yard, not stall fed."

We don't know how it is exactly with his other fowls—but for his swans and beautiful geese of various breeds, we have observed something very much resembling yellow corn, lying constantly on the sandy shores of the lake they so much enjoy and ornament.

We have lately had the pleasure to receive from him a letter, which, though not meant for publication, contains various items well worthy of the space they will occupy in another number.

TO CORRESPONDENTS.

WE occasionally receive letters from some of our friends who believe that their road to free trade which lies in the direction of the tariff of 1846, is shorter than ours which lies in the direction of affording to the farmer and planter, the aid that is necessary to enable them to draw to their sides the consumers of food and cotton, with their looms and anvils, and who desire to see the opposite side of the question. One such is now before us, requesting us to copy a chapter of *Say's Political Economy*. To that suggestion we shall give attention as soon as we shall have finished the series of papers now in progress, and which occupy, and will for a short time continue to occupy, all the space we can devote to the political economy of agriculture. In the meantime, we beg our friends and correspondents, and all who entertain similar views, to read carefully what is here set down, and if after having done so, they shall feel disposed to answer it, to do so in our columns. We desire them to remark that the question to be settled is, which is the shortest, surest, and most certain road to *perfect freedom of trade*. Their object and ours are precisely the same, and we differ only as to the means. Mr. Say furnishes us with a theory of free trade, but it is unnecessary that we should study his book to obtain it. What we desire to do is to show what are the distracting causes which have thus far prevented the establishment of such freedom, and must continue so to do, and to show that there is a remedy for the disease. Doctors are sometimes more necessary than green grocers or butchers. If the former were not called in, when occasion required it, the services of the latter would be likely to be soon dispensed with.

THE SPREAD OF LIGHT IN AFRICA. "*And to them which sat in the region and shadow of death, light is sprung up.*" To every benevolent mind the "glad tidings" from this benighted region of the world must prove to be truly gratifying. Among other evidences of the stability of the settlement and of its social progress, we were hardly prepared to hear of the formation of an agricultural society by the settlers at Bassa Cove.

One condition of admittance is that "no person belonging to this Association shall send to America through its officers, less than 100 lbs. arrowroot, or than 200 lbs. ginger, or than 100 lbs. coffee, or less than one barrel of pepper, and all persons who think that they can come up to the above standard, may become a member of this association."

The officers are WM. HARRIS, *President*; ISAAC JACKSON, *Vice President*; G. L. SEYMOUR, *Secretary*.

There are many other members who have pledged themselves, and who think that they will be able to make small shipments next year, say as much as 2150 or 2200 lbs. of arrowroot, and other articles accordingly, such as ginger, coffee, pepper, &c.

We shall have pleasure in sending, through the estimable secretary of the Colonization Society, Mr. CRESSON, a copy of "The Plough, the Loom, and the Anvil," and some other volumes, that may prove so many lights in the wilderness, the darkness whereof may make even the feeblest ray acceptable.

READINGS FOR MOTHERS AND CHILDREN.

A LETTER FROM THE LATE WILLIAM WIRT TO HIS LITTLE DAUGHTER OF EIGHT YEARS OLD.

THE saying is, unfortunately, as true as it is old, that promises are like pie crust—made to be broken. Thus have we too often broken, in "*THE PLOUGH, THE LOOM, AND THE ANVIL*," the promise to maintain unbroken the department opened in it, for appropriate "*READINGS FOR MOTHERS AND CHILDREN*."

If there be any trait more admirable than others in the character of the late W. WIRT, as given by KENNEDY, in a style and with feelings that do honour alike to the writer and his subject; it is in the all-absorbing devotion of the former, as evinced in all his letters, to *his children and their mother*! We know not when we have read any work with livelier interest or more unqualified admiration, of the author and his theme. Enough to say that they are suited to and worthy of each other, and that not only the family and friends of Mr. Wirt, but the public, may be congratulated that the memorials of his goodness and his greatness of heart and of mind, were consigned to a biographer who has proved himself so well qualified to deal adequately and justly, with a task at once so responsible and so delicate. Having, in the midst of toil and anxiety, found in these volumes refreshment such as recruits the exhausted traveller when he lights, unexpectedly, on a limpid and cool spring on the way side; we feel a sort of obligation to add, even our humble testimony, to never having read any memoirs better fitted than these to form a part of every *family library*. In philosophy sound—in morals chaste—and in style at once pure and eloquent but entirely free from ostentation; they fairly present Mr. Wirt and his bosom companion, as models, respectively, in their public and in all their social relations.

We are sure that every mother and every daughter will share the pleasure we enjoyed

in reading the following letter thus introduced by the accomplished biographer:—

"Passing from these topics," says Mr. Kennedy, "the reader will be pleased with the glimpse, which the next letter affords, into the privacy of domestic life, and the affectionate solicitude with which the subject of our memoir devoted himself to the education of his children. His eldest daughter, Laura, was now eight years of age. He has already marked out her course of study; and his aim is to awaken her mind to a perception of the value of the discipline he inculcates. To that end, this letter is addressed to her, in language of such plain and simple structure—almost in words of single syllables—as may reach the comprehension of a child, but, at the same time, wrought with admirable skill into a moral lesson of exquisite beauty.

"There is nothing amongst Mr. Wirt's productions more pleasantly characteristic of himself than this letter to his child."

TO LAURA H. WIRT.

Richmond, September 13, 1811.

MY DEAR LAURA:—

I would have answered your letter sooner, but that my courts and my clients hardly leave me time to write to your dear mother, to whom, of all other earthly creatures, you and I owe our first duties. But I have not loved you the less for not writing to you: on the contrary, I have been thinking of you with the greatest affection, and praying for you on my bended knees, night and morning, humbly begging of God that he would bless you with health and happiness, and make you an ornament to your sex, and a blessing to your parents. But we must not be like the man that prayed to Hercules to help his wagon out of the mud, and was too lazy to try to help himself:—no, we must be thoughtful; try our very best to learn our books, and to be good; and then, if we call upon our Father in heaven, he will help us. I am very

glad your Latin grammar is becoming easier to you. It will be more and more so, the more you give your whole mind to it. God has been very kind in blessing you with a sound understanding; and it would be sinful in you to neglect such a great blessing, and suffer your mind to go to ruin, instead of improving it by study, and making it beautiful, as well as useful, to yourself and others. It would be almost as bad as it would be for Uncle Cabell to be so lazy himself, and to suffer his labourers to be so lazy, as to let his rich low grounds run up all in weeds, instead of corn, and so have no bread to give his family, and let them all starve and die. Now your mind is as rich as Uncle Cabell's low grounds; and all that your mother and father ask of you, is, that you will not be so idle as to let it run to weeds; but that you will be industrious and studious, and so your mind will bring a fine crop of fruits and flowers.

Suppose there was a nest full of beautiful young birds, so young that they could not fly and help themselves, and they were opening their little mouths, and crying for something to eat and drink, and their parents would not bring them anything, but were to let them cry on from morning till night, till they starved and died, would not they be very wicked parents? Now, your mind is this nest full of beautiful little singing birds; much more beautiful and melodious than any canary-birds in the world; and there sit fancy, and reason, and memory, and judgment,—all with their little heads thrust forward out of the nest, and crying as hard as they can for something to eat and drink. Will you not love your father and mother for trying to feed them with books and learning, the only kind of meat and drink they love, and without which those sweet little songsters must, in a few years, hang their heads and die? Nay, will you not do your very best to help your father and mother to feed them, that they may grow up, get a full

suit of fine glossy feathers, and cheer the house with their songs? And, moreover, would it not be very wrong to feed *some* of them only, and let the rest starve? You are very fond, when you get a new story-book, of running through it as fast as you can, just for the sake of knowing what happened to this one, and that one; in doing this you are only feeding one of the four birds I have mentioned,—that is, *fancy*, which, to be sure, is the loudest singer among them, and will please you most while you are young. But, while you are thus feeding and stuffing fancy,—reason, memory and judgment are starving; and yet, by-and-by, you will think their notes much softer and sweeter than those of fancy, although not so loud, and wild, and varied. Therefore, you ought to feed those other birds, too: they eat a great deal slower than fancy: they require the grains to be pounded in a mortar before they can get any food from them; that is, when you read a pretty story, you must not gallop over it as fast as you can, just to learn what happened; but you must stop every now and then, and consider why one of the persons you are reading of is so much beloved, and another so much hated. This sort of consideration pounds the grains in a mortar, and feeds reason and judgment. Then you must determine that you will not forget that story, but that you will try to remember every part of it, that you may shape your own conduct by it,—doing those good actions which the story has told you will make people love you, and avoiding those evil ones which you find will make them hate you. This is feeding memory and judgment both at once. Memory, too, is remarkably fond of a *tit-bit* of Latin grammar; and, though the food is hard to come at, yet the sweet little bird must not starve. The rest of them could do nothing without her; for, if she was to die, they would never sing again,—at least not sweetly. Your affectionate father,

WM. WIRT.

RECEIPTS.

Mix any kind of essential oil with paste, and it will never become sour or musty.

—◆—
To cure a Ring worm.—Infallible.—Heat a shovel to a bright red—cover it with grains of Indian corn—press them with a cold flat iron. They will burn to a coal and exude an oil on the surface of the flat iron, with which rub the ring worm, and after one or two applications it will be *kilt* as dead as Julius Caesar.

Fried Fowl.—When you have cut up the fowl, put the pieces into a basin with a little salt, pepper, a spoonful of oil, and two of vinegar, and a little chopped eschallot, stir them well in it, and let remain for half an hour, have ready a quantity of batter, and take a fork and dip each piece one after the other into it, and then let it drop into the frying-pan, in which is sufficient hot fat to cover them; fry to a nice colour, and serve in a pyramid, with fried parsley over, or any sauce you like under.

THE AGRICULTURAL ADVERTISER.

MARCH, 1850.

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" Aug., "	"	317	"
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